



FRIDAY, FEBRUARY 25, 1876.

Supplementary Buffer Spring.

It is a fact which we state on the authority of experienced car-masters, that more cars are injured from concussion of one car against another than from drawing or jerking on the draw-bars. To provide a remedy for this, Mr. Leander Garey, the Superintendent of Cars of the New York Central & Hudson River Railroad, has added supplementary buffing springs to draw-bars. These springs come into use only when the draw-bars are compressed. The arrangement of this is shown very clearly in our engravings, of which fig. 1 is a longitudinal section and fig. 2 an inverted plan. A is an ordinary double-coil buffing spring, which is attached to the car and operates in the usual way; that is, it has two follower plates, C and D. These work between two pairs of bars, EE and FF, on each side, which form guides for the follower plates. When the draw-bar G is drawn outward, the follower plate C bears against the stops HH, fig. 2, and the follower D against the end I of the draw-bar. The tension on the latter thus presses the follower D against the spring A, which in turn bears against the follower C, which is held by the stops HH. This spring is therefore compressed by the outward motion of the draw-bar. It will be noticed, however, that the latter is not tied in any way to the spring B, so that when it is drawn outward that spring is not subjected to any strain. The follower D also bears

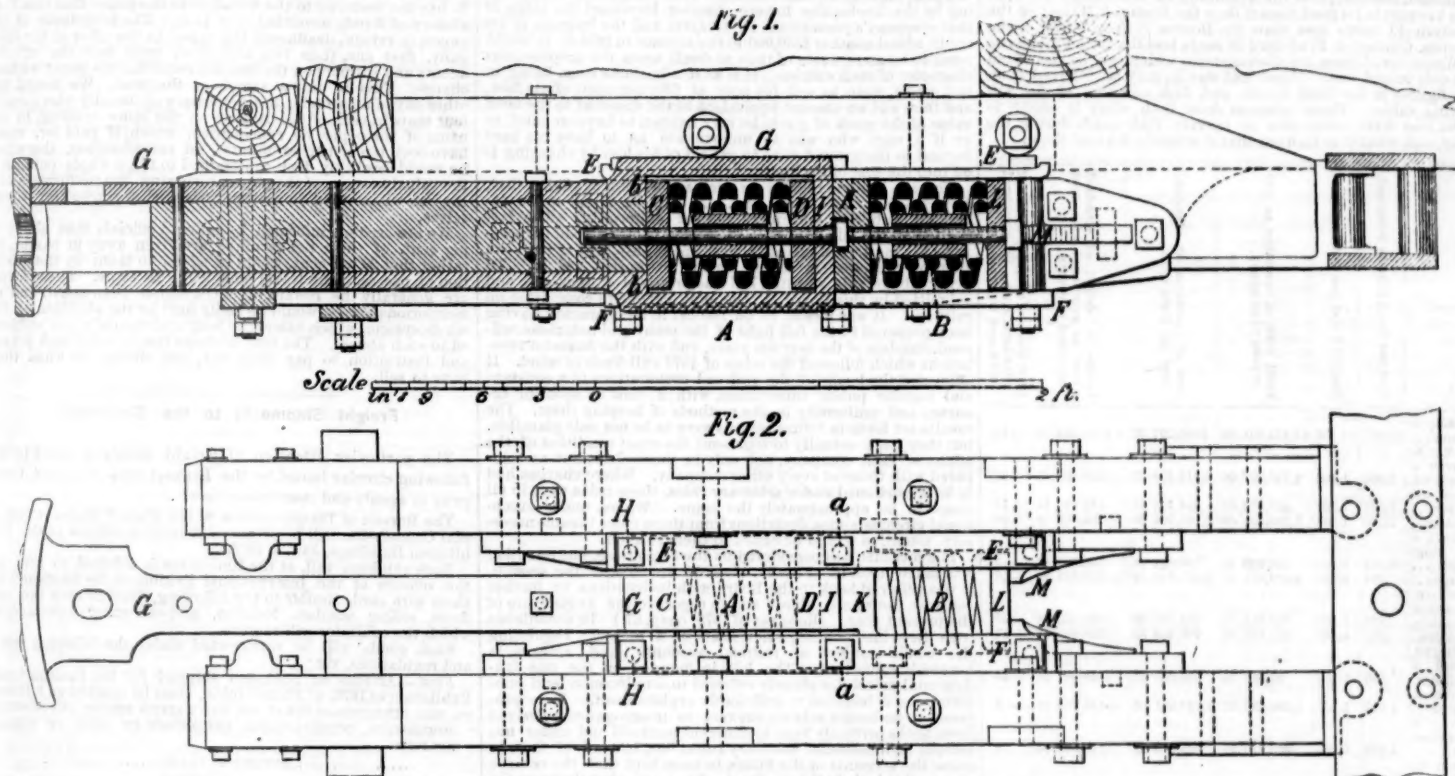
Railroad Accounts and Returns.

(From the Seventh Report of the Massachusetts Railroad Commissioners.)

For several years past the Commissioners have in each of their annual reports, freely criticised the methods of book-keeping in use by the various railroad corporations of the State, and the character of the returns made from them. The railroad returns are, and must continue to be, essentially unreliable, if not even deceptive, until a radical reform in the methods of railroad book-keeping is effected. Upon this point the Commissioners have no new considerations of a general nature to offer. The cause of the difficulty is obvious. It dates from the very origin of the railroad system, when it was not at all appreciated what that system as a whole, or the several members of it individually, were destined to become. Railroads were then regarded as purely private enterprises managed by corporate bodies, in the doings and business affairs of which the holders of the company's stock alone were interested. They were supposed to be more analogous to turnpike corporations than to anything else, and enjoyed much the same exemption from public supervision, nominal returns only being made by them. Gradually, however, the public character of the functions they exercised became better understood, until, as long ago as the year 1846, only eleven years after the first three roads were opened in Massachusetts, the corporations were called upon by a general law for annual statements of their doings and condition, which since then have been published as part of the records of the State. In some other States of the Union, however, no such returns have ever been required, and nothing is known of the affairs of the railroad companies, except what their officials see fit to make public. Neither has provision ever been made in Massachusetts, or elsewhere, to secure any uniformity in the books and the methods of keeping them, which lie behind the returns. A system might indeed be prescribed by law, and in some cases has been, but the carrying out of the system is left practically in the discretion of the several corporations. Until the year 1873, the Massachusetts returns seem to have been accepted as they were sent in, and published for what they were worth without scrutiny or comment. It is consequently almost need-

apply to the real facts the arbitrary rules which each company lays down for its own guidance, and which do not appear on the face of the returns. The process is perfectly simple. The property of every railroad corporation consists of its road-bed and rolling stock, and certain outside assets of uncertain value; its income is derived from its business as a common carrier, and the greater part of it is necessarily expended in carrying that business on. Any balance over and above the amount thus expended constitutes the net earnings of the road. What the amount of this balance is, or may be made to seem to be, depends within very wide limits upon the arbitrary rules under which the accounts are kept. What in one case is charged to construction may in another case be charged to current expenses, or the reverse; the cost of renewals may be discontinued, and the property allowed to deteriorate; or a certain amount of current indebtedness may be suffered to accumulate, and the unpaid vouchers be carried over from one year to another. Through any or all of these processes a road on the verge of ruin may be made to appear in a flourishing condition; and, side by side with it, a road choked with remunerative business may be represented as daily going behind-hand. Yet all the while each return will be accurately drawn from the books, and, what is more, the officials of each company may very honestly consider that the returns made by them are the more correct in principle. Indeed, discretion and good judgment enter so largely into railroad accounting, that it has been in no way unusual for corporations to find themselves hopelessly bankrupt before those who managed their affairs were aware that they were in a position of danger.

The degree to which the balance representing net earnings may be apparently increased or diminished at will can be perfectly illustrated in a matter of now almost daily experience—the replacing of iron by steel rails. Of two corporations engaged in doing this, one is embarrassed and wishes to increase its apparent income; the other is pursuing a conservative course, and is improving the value of its property. Each must lay down some rule under which the unusual outlay for steel in place of iron shall be entered on its books. The embarrassed corporation so manipulates the account that the whole outlay is ultimately charged to construction; while by the con-



SUPPLEMENTARY BUFFER SPRINGS FOR FREIGHT CARS.

Designed by Leander Garey, Superintendent of Cars of the New York Central & Hudson River Railroad.

against stops under the nuts a a, fig. 2, so that when the draw-bar is pushed in the spring A bears against D, which is held by the stops, and C is pressed back by the shoulders b b, fig. 1, in the draw-bar. The spring B also has two followers, K and L, which work in the guides EE and FF, in a similar manner to C and D. L bears against the stops M M, while K can move freely in the guides. Therefore, when the draw-bar is pushed inward, it will be seen that its back, I, will bear against K, which in turn compresses the spring B, so that when the draw-bar is compressed or pushed inward both the springs come into action, but when it is subjected to tension or drawn outward only the one spring A is compressed. In this way there are two springs to resist the concussions of cars and only one to resist the tension on the draw-bar. The other details of the drawing are perfectly plain, so that no further description is needed. This arrangement of buffer springs has worked very satisfactorily, and is now being extensively introduced on the New York Central & Hudson River Railroad.

Contributions.

Caution.

CENTRAL PACIFIC RAILROAD COMPANY,
General Superintendent's Office,
SAN FRANCISCO, Cal., Feb. 11, 1876.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Charles Emerson and Clair Percy, representing themselves to be conductors of the Central Pacific Railroad, are, as I am credibly informed, attempting to procure favors from officers of railroad companies east of the Missouri River.

I desire to state that we have never had on our road any employees, as conductors, bearing such names.

A. N. TOWNE,
General Superintendent,

less to say that they were worth very little. For years their preparation was regarded by those on whom it devolved as a mere formal task, in which accuracy was of little importance. Accordingly, the earlier series of returns will not bear the slightest examination. Their errors and discrepancies are gross and apparent. It is, for instance, quite out of the question to ascertain from them even how many miles of railroad there were in Massachusetts at any given time; an item of information, perhaps, as important as any, and one in respect to which accuracy would seem not very difficult of attainment. In the year 1873 a wholly new system was adopted. The returns as they came in were very carefully scrutinized, and explanations of all apparent discrepancies required. In this way, when the figures were published, though this Board in no way held itself responsible for their real accuracy, they were at least plausible.

They are, however, still often inaccurate, and at times even deceptive. Indeed, wherever those in charge of a corporation have any object to gain by a concealment of the true condition of its affairs, these returns afford an excellent opportunity, amounting to almost an invitation, for either the suppression of the true or the suggestion of the false. They do so in a very obvious way. They are collected by authority of law and compiled by public officials; they are prepared under oath and upon a uniform schedule of interrogatories, the answers to which are carefully tabulated. Under all these conditions the returns go out to the public with a species of endorsement of their truthfulness and accuracy on the part of the Commonwealth. They thus enjoy an authority which in no way belongs to them. In the popular mind it is naturally supposed that, as the results are uniform, the methods through which they are arrived at are likewise uniform, and it requires very considerable familiarity with railroad accounts to see that this is not the case. The returns of each road, on the contrary, are arrived at from a system of book-keeping peculiar to itself, through the application of arbitrary rules, which in different cases may or may not be the same, and which, in the case of corporations at all embarrassed financially, are almost certain to be exceptional. Under such a system it is in no way necessary to have recourse to fraud or misstatement in order to give to a company's affairs a desired aspect, whether favorable or otherwise. It can be done with perfect certainty, and yet the books be accurately kept and the results truthfully deduced from them. It is only necessary to

servative corporation it is met at once out of its net earnings. When the cost of the steel is thus disposed of, the old iron still remains among the assets of the two corporations—piled up along the track awaiting a purchaser. It must, therefore, appear in their returns as property on hand. One corporation charges it off its books as so much material on hand required for use in yards, sidings, etc.; while the other will estimate it, not at its market value, but at its original cost, on the ground that it is still fit for use. Thus, by a simple and perhaps not dishonest manipulation of accounts, in a way which is not apparent on the face of the returns, a corporation which is doubling the value of its property may prove itself unable to pay a dividend; while another corporation on the high road to insolvency may figure out a heavy surplus.

It is these returns, however, which now practically give to the stockholders as well as to the public all the insight they get into the condition of the railroad companies. The affairs of these corporations are so complicated and vast, and their constituency is so numerous and scattered, that the private investigations once possible are now out of the question. It is very difficult even for directors themselves to make them; impossible for any one else. Yet railroad securities are quoted and bought and sold in a way which was formerly peculiar to government bonds. The returns being, then, the only source from which information as to the value of these securities is to be had, they are nevertheless of little value in the hands of one not accustomed to railroad accounts; while one familiar with the facts to be applied to them can make them produce thoroughly inconsistent results. Take, for instance, the test most commonly accepted—that of the cost of running a train one mile—and let it be applied comparatively among a number of not dissimilar roads. Into this cost enters all the expense of operating the road;—when it is returned at a large amount, it indicates that the company is putting its net earnings into its property; when it is very small, it indicates that the company is running down its property in order to make a favorable balance,—in other words, that it is living on its capital.

The accuracy of any result arrived at through the application of this test necessarily depends, in the first place, on the correctness with which the mileage account is kept, and upon what in each case enters into it. That, again, is decided by arbitrary rules. Some corporations make the computation in one way, some in another. Take, for instance, the allowance for construction trains and switch-engines on the several Mas-

sachusetts roads. An examination of the replies to the special interrogatories, printed in appendix C, will show at a glance how widely these allowances vary. Among the roads leading out of Boston, for instance, one makes no account of the miles run by its switching-locomotives at all; while another enters them at 5 miles an hour, another at 6, and still a third at 7. The Fitchburg road, then, allows for them 50 miles apiece for each day, and the Boston & Providence 163. Presently another company renders a return in which they enter for the distance they actually run, the engine-driver being supposed to keep an account.* In the first place, therefore, there is no uniformity in the mileage account, upon which the value of the test depends. Accepting it, however, as the best attainable, it remains to apply it to the Massachusetts returns.

The true average cost of running a train one mile,—the standard cost for purposes of comparison,—may be arrived at with approximate correctness by taking the average of six of the Boston roads,—the New York & New England being excluded on the one side and the Boston & Providence on the other, as exceptional roads. The average cost of running a passenger train one mile is found to be \$1.15, and that of running a freight train \$1.30; the average cost per train mile run, is \$1.106. The test will be found applied in the accompanying table to the returns of fifteen railroad corporations for the last year. In the case of each corporation the total train mileage returned by it is multiplied by the standard cost of running a train one mile, and the result shows how much it may be assumed to have cost such company to operate its road during the last year. The next column contains the cost of such operation as actually made up from the company's books. The difference between the two may be taken to roughly indicate the policy of the several companies in regard to maintaining or depreciating their property during the year. It will be seen that the cost of running a train one mile varies 130 per cent.; that it ranges from 60 cents to \$1.41; and the inference is irresistible, that while some corporations are using up their property year by year, others are accumulating it with equal rapidity. A small margin of difference is natural, and calls for no explanation. That it should cost the Old Colony 2 cents more or less per mile to run its trains than it does the Boston & Albany, is small matter for surprise. That it should, however, cost the Fitchburg 32 cents more per mile run to operate its road than it does the Boston & Maine; or the Eastern 42 cents less than the Boston & Providence; or the Boston, Clinton & Fitchburg 36 cents less than the Providence & Worcester,—these are discrepancies which can be accounted for only in one way. What that is, may be inferred from the figures in the third, fourth and fifth columns of the following table. These columns show both what it ought to have cost these companies to operate their roads during the year, and what it is claimed that it actually did cost them.

	Cost per train mile as returned.	Standard cost per train mile.	Total cost of operation as per return of company.	Cost of operation at standard cost per train mile.	Excess or deficit of standard cost as compared with cost reported in return.	Percentage of excess or deficit of standard cost, as compared with cost reported in return.
Boston & Prov.....	\$1.417	\$1.106	\$1,194,021 89	\$885,007 51	+\$248,924 34	+28
N. Y. & N. Haven & Hartford Conn. out River....	1.300	1.106	2,727,397 96	2,216,492 37	+510,905 59	+23
Fitchburg N. York & N. Eng. land.....	1.273	1.106	419,679 65	364,484 51	+55,195 14	+15
Boston, Clinton & Fitchburg.....	1.330	1.106	1,328,501 56	1,102,784 86	+225,716 70	+20
Eastern.....	1.061	1.106	766,620 11	730,021 94	+36,598 17	+5
Boston & Albany.....	.994	1.106	2,069,871 61	2,303,501 59	-233,629 98	-10
Fitchburg & Cheshire.....	.832	1.106	718,314 75	984,875 33	-266,560 58	-25
Springfield, Athol & N. East'n. Boston & Maine.....	.918	1.106	881,444 84	700,404 36	+181,040 48	-17
Providence & Worcester.....	.905	1.106	59,981 14	100,668 75	-40,687 61	-45
Nashua, Acton & Boston.....	1.011	1.106	1,594,986 77	1,743,691 95	-148,705 18	-8
Worcester & Nashua Old Col. ny.....	1.190	1.106	653,230 96	604,872 32	+48,358 64	+8
Boston & Albany.....	.685	1.106	44,145 60	71,252 94	-27,107 34	-38
Providence & Worcester.....	1.077	1.106	336,079 21	345,020 02	-8,940 81	-3
Boston & Albany.....	1.119	1.106	1,553,744 40	1,534,553 90	+19,190 41	+1
Boston & Albany.....	1.094	1.106	5,371,902 88	5,429,592 80	-57,690 01	-1

A similar difference of system among the several corporations is made apparent by a comparison of the cost at which their rolling-stock stands on their books. The variations are so wide as to be almost ludicrous. The explanation is again found in the fact that each company is a law unto itself. In one return, a number of new engines or cars made in the shops of the company during each year are charged as part of the expenses of operation, on the ground that they roughly represent the general deterioration of the rolling-stock. In another case, it will on examination be found that every addition to rolling-stock is charged to construction, and that old numbers are carried on the books long after that which they once represented has been condemned for deterioration. The present cost of a new, first-class 8-wheel locomotive weighing 30 tons is \$3,000; that of a new, first-class passenger-car, complete, is \$4,000; while a box freight-car costs \$700, and a flat or platform freight \$575. On the books of the companies it will be noticed that locomotives vary from \$2,507 to \$12,565; passenger-cars from \$96 to \$4,500; and freight-cars, box and flat (in the way the returns are made, the value of these cannot be separated), from \$57 to \$868. In glancing over the table, the discrepancies are so great that it is not easy to believe that the figures in any one column relate to property of the same description.

Names of Companies.	Locomotive.	Passenger Cars.	Freight Cars.
Boston & Albany.....	\$6,518 00	\$1,941 00	\$475 00
Boston, Clinton & Fitchburg.....	11,732 00	3,655 00	717 00
Boston & Lowell.....	4,210 00	1,046 00	113 00
Boston & Maine.....	7,906 00	2,689 00	291 00
Boston & Providence.....	2,507 00	311 00	94 00
Cheshire.....	4,467 00	1,780 00	379 00
Connecticut River.....	5,304 00	1,106 00	269 00
Eastern.....	10,344 00	4,500 00	536 00
Fitchburg.....	3,405 00	96 00	215 00
New Haven & Northampton.....	12,565 00	3,812 00	868 00
Norwich & Worcester.....	3,597 00	1,102 00	87 00
Old Colony.....	6,285 00	1,925 00	348 00
Providence & Worcester.....	9,012 00	3,216 00	349 00
Springfield, Athol & Northeastern.....	8,000 00	2,235 00	750 00
Worcester & Nashua.....	6,841 00	3,865 00	334 00

Again, as respects passenger mileage. From this item in the returns are necessarily deduced, not only the statistical re-

sults in regard to accidents, but also the rates at which passengers are carried. In making it up, however, the several companies each have their own system. Among the Boston roads, six out of the eight altogether exclude from the aggregate passengers traveling on free passes, and many of them apparently do not even keep a record of the free passes issued. Two of the eight, however, are more particular; and while this class of passengers appear in the returns of the Boston & Albany road as having traveled 1,642,513 miles, they appear in that of the Fitchburg for the larger amount of 1,814,248 miles.

The system now in use is, however, open to far graver objections than have yet been advanced. Its worst feature is the opportunity it presents for the practical falsification of accounts under great temptation to falsify. It renders not only possible, but usual, the most extraordinary and unwarrantable liberties with the principles of book-keeping. The construction account of a railroad corporation, for instance, is supposed to represent what its property cost—the money actually put into it—and what accordingly it is approximately worth. As a matter of fact, however, in not a few cases almost everything finds its way into it—not only bad debts and discounts, but even interest and losses. Consequently, the more certain corporations lose and the heavier the discount to which they are subjected as borrowers, the more their property appears to be worth. A striking case in point is furnished in the recent experience of the Eastern Railroad. The total amount expended by that company in construction is returned as \$12,362,111.54. An unadvised examiner would be apt to place the value of its property in the neighborhood of this amount, on the ground that the sum had been expended on it. A closer investigation would reveal the fact that, while the loss incurred through the accident at Revere was nominally charged off to account of profit and loss in 1874, yet, at the same time, it was practically, to the extent of at least \$284,000, worked into construction by means of certain book-entries which offset against it charges for construction trains, and transfers of nominal surpluses from the books of other companies. As respects the discount at which the securities of this corporation have been sold during the last two years, no concealment has been made. They have been charged, to the amount of \$699,000, directly to construction. Practically, therefore, judging by the books, the Revere disaster increased the value of that company's possessions by \$284,000, and the badness of its credit added another \$699,000 to the amount in 1874-5. It would seem to be mere waste of time to dwell upon the preposterous character of such entries. It is as if a business man, being in bad credit, were to sell his note at fifty per cent. of its face, and then add an amount equivalent to the discount to the book value of the stock of goods he may happen to have on hand; or as if a man who was so unfortunate as to have his barn burned to the ground were to get rid of his loss by charging it off into the cost of his house.

There is but one remedy for such a condition of affairs; that, however, is a very obvious one. It will be found in an increased publicity and more perfect uniformity. The last vestige of the old idea that the accounts of railroad corporations are matters of private concernment only, and as such can best be managed in secret, must be gotten rid of. To bring about this result, a bill was prepared a year ago, and submitted by this Board to the joint legislative committee on railways. It was meant to be radical in its character, having been prepared in the full light of the many and notorious railroad scandals of the last ten years, and with the financial revelations which followed the crisis of 1873 still fresh in mind. It subjected the books of the railroad corporations to a constant and regular public supervision, with a view to securing accuracy and uniformity in the methods of keeping them. The results set forth in future returns were to be not only plausible, but they were actually to represent the exact condition of the affairs of each company, not only in themselves, but as compared with those of every other company. Where charges had to be apportioned under arbitrary rules, those rules were in all cases to be approximately the same. Where, under exceptional circumstances, deviations from those rules became necessary, attention was to be called to them as such.

The measure was considered by the committee, but no action was taken upon it. Finally, towards the close of the session, it was referred back to the Board with instructions to further consider the whole subject and to report to the Legislature of the present year. (Resolves of 1875, chap. 67.) In accordance with these instructions, a new draft of a measure regulating the whole subject of railroad accounts and returns is herewith submitted. The bill is founded on the two fundamental principles already referred to,—uniformity and publicity, and is believed to sufficiently explain itself. It is proposed to no longer rely on answers to interrogatories derived from books privately kept by different methods and under numerous and dissimilar arbitrary rules; but, instead of that, to cause the accounts of the future to be so kept that the returns when published shall be understood to mean what they say. On the other hand, it is not intended to establish any public auditorship over the railroad corporations, nor in any way to dictate to them as to how they shall spend their money. Nothing of all this sort is contemplated. They will hereafter, as now, be at perfect liberty to dispose of their means in whatever way, wisely or unwisely, they see fit, only the disposition they make of it is to appear distinctly and visibly in the returns, with a view to its being generally and correctly understood.

Should the measure now submitted, or any suitable substitute for it, become a law, the Commissioners are prepared to state exactly the course they propose to pursue. Under any effective measure, some one, presumably this Board, must be authorized to prescribe a system. To secure the most acceptable general result, the Commissioners would, at a suitable time, call together the representatives of the various roads, and request them to select from their own accountants a committee to prepare and report on a common system of book-keeping, with a body of rules for securing the utmost attainable uniformity in entries. This could better be accomplished by those representing the corporations themselves, than by any outside authority; and it is of comparatively small importance what system or what rules are fixed upon, provided they be uniform and intelligible. A general supervisor of railroad accounts would then have to be appointed. As the voluntary and friendly co-operation of the railroad corporations is of the utmost importance in this matter, and, indeed, essential to an early success, this appointment also should, if possible, be made acceptable to them. If they could agree in recommending a proper and competent man, he should be appointed. These preliminaries accomplished, it would only remain, on the first of next October, to set the machinery in motion. Thereafter, new questions must be settled as they present themselves. The aim of the Commissioners would, therefore, be to have this reform practically brought about by the voluntary action of the corporations; the law merely giving a necessary motive to it, and the Commissioners acting as the medium through which it may be rendered certain that some action will be had.

There would seem to be but two sources from which any opposition to a reform of this character can be anticipated. It

* The mileage account of the Boston & Providence is probably more nearly accurate than that of any other corporations referred to. It was based on actual results indicated by Wythe's speed recorder, whereas in the other cases the allowances were apparently purely arbitrary. Through the general use of speed recorders only can any accuracy, in regard to the cost of running locomotives, be arrived at. It is unfortunate that such little use is made of them.

† In making up this column, the snow-plows on wheels have been estimated at \$1,000 each, and the baggage and mail cars at \$2,000 each, and deducted from the totals.

may come from those whose past or future operations it would expose to a scrutiny they cannot bear, or from the vestiges of private railroad conservatism. Objections from neither source would seem to be entitled to any weight. Meanwhile, the whole body of legitimate investors in railroad securities are most directly interested in a movement so calculated to save them from a repetition of the frequent and scandalous disasters of the past. The public is not less directly interested in having that accurate information of the doings and conditions of its transportation agencies which it is now impossible to procure. Finally, all honest and well-disposed railroad officials and directors are interested in the development of a system which will render fraud difficult, and give to each company and its management such credit as is justly its due.

Free Passes.

The Indianapolis Journal in the course of an article on this subject, after speaking of the practice of underpaying ministers of religion and then claiming half-fare rates for them on the railroads, says:

The foregoing is, however, the least offensive of the dead-head system that has acquired such immense proportions and is becoming an intolerable bore and nuisance in America, and by which the railroads, public press and places of public entertainment are the greatest sufferers. Why should a law-maker, judge or an editor be passed free over a railroad? As a rule the passes are given by persons who hold no stock in the corporation, but are paid salaries by the stockholders, whom they remunerate by giving away their dividends, to make capital for themselves or to obtain immunity from criticism for mismanagement. The whole system we unhesitatingly denounce as a fraud of the first water. But that is not all. It is a little contemptible system of bribery that should be suppressed, if possible, by legislation. If not possible in that way, then, by force of public opinion.

The abuse of the system is the natural fruit of the system itself. The railroad company passes the editor of the paper, while the paper has an editor in every friend that may call and promise to send him a line from the point he wishes to visit. It has not occurred to the friend or to the paper that this is an abuse and fraud; nevertheless it is so. The proprietor of the paper, in return, deadheads the paper to the office of the company, first one, then two, and so on until half the officers, agents and scalpers on the line are receiving the paper without charge. This is only a sample of the pest. We heard the other day of an attaché of a newspaper of this city who secured four seats in each of the theatres on the same evening, in the name of the paper he represented, which, if paid for, would have cost ten or twelve dollars. In consideration, therefore, he would probably feel constrained to fill a whole column of the valuable space of the paper, reviewing the performers of a can-can who needed no written review; they showed for themselves.

We are credibly informed by railroad officials that about 20 per cent. of their net earnings are given away in passes, or, rather that 20 per cent. would be added to them by the abolition of passes, if the travel remained the same. These favors are generally the reward of cheek rather than merit, and no meritorious person would be badly hurt by the abolition of the whole system, which cannot be long maintained while subjected to such abuses. The true business theory is for each person and institution to pay their way, and charge for what they have to sell.

Freight Shipments to the Centennial.

The particular attention of freight agents is called to the following circular issued by the Pennsylvania Railroad Company to agents and connecting lines:

The Bureau of Transportation of the United States Centennial Commission will be prepared to receive articles at the Exhibition Buildings, Jan. 3, 1876.

Each exhibitor will, at the time space is allotted to him by the officers of the International Exhibition, be furnished by them with cards similar to the following, filled in with the address, siding number, location, and all other information which the exhibitor will require.

Such goods will be transported under the following rules and regulations, viz:

First.—Articles or packages shipped for the International Exhibition of 1876, at Philadelphia, must be marked as follows: TO THE DIRECTOR-GENERAL OF THE UNITED STATES CENTENNIAL COMMISSION, INTERNATIONAL EXHIBITION OF 1876, AT PHILADELPHIA.

Second.—To facilitate the delivery of packages so marked there have been constructed within the Exhibition Grounds several lines of railway. At convenient points on these lines are located sidings and platforms for the delivery of articles to be exhibited in the immediate vicinity. Each siding is designated by a number, and the address, label or tag on each article or package must give the number of siding at which it is to be delivered.

Third.—All charges for freight, transfers, etc., and terminal expense, must be collected at the time of shipment. The United States Centennial Commission will not be responsible for any such charges, nor will exhibits be received unless this regulation is complied with.

Fourth.—The terminal charges made by the Bureau of Transportation of the International Exhibition will be as follows:

On each separate article or package weighing 250 lbs. or less \$1.00 each.
On each separate article or package weighing from 250 lbs. to 5,000 lbs. 40 cents per 100 lbs.
On each separate article or package weighing over 5,000 lbs. 50 cents per 100 lbs.

Fifth.—Original manifests should be made in duplicate, one copy of which should be mailed to the Chief of Bureau of Transportation United States Centennial Commission, Philadelphia, and must show, in addition to the information customarily given in them, the siding number given in the address; also, the amount of terminal charge collected on the shipment, and the precise routes by which transported—specifying in detail every road over which the freight is shipped, from point of starting to Philadelphia, so that it may be returned by the same route as received. If forwarded by water, the line transporting it must be named.

Sixth.—Bills of lading must show the precise route by which the articles or packages are to be transported—specifying in detail every road over which the freight is shipped, from the point of starting to Philadelphia, so that it may be returned by the same route as received. If forwarded by water, the line transporting it must be named. A duplicate copy of the bill of lading must be mailed to the Chief of the Bureau of Transportation United States Centennial Commission, Philadelphia.

Seventh.—At the close of the Exhibition, the Chief of the Bureau of Transportation will issue, when necessary, certificates showing what articles are unsold, and are to be returned by the route over which transported to the Exhibition to the place of original shipment.

Agents must pay no charges or expenses of any kind on goods for the Exhibition, but must in all cases require payment of the freight and transfer charges through to destination, and, in addition, the terminal expenses to be incurred at the Centennial Grounds, as provided for above.

Where articles are of different weights in same shipment, the agent must be careful to collect the terminal charges on each package.

The attention of shippers should be called to the importance of concentrating small articles into packages, in order to avoid the risk of loss or damage to small articles not properly boxed.

No article will be received unless marked with the tags furnished to exhibitors by the officers of the Exhibition; and unless the above rules and regulations are strictly complied with, agents must refuse to receive the goods for transportation.

Regular rates will be charged on all such goods carried over the said lines of the Pennsylvania Railroad to the International Exhibition; and all such goods as are unsold will be returned free of charge over the said lines of the Pennsylvania Railroad, upon the certificate issued by the proper officer of the International Exhibition, that such goods passed over the lines of the Pennsylvania Railroad, and were on exhibition, unsold, and being returned to the point from which they were originally shipped.

The charge from West Philadelphia, Germantown Junction, North Pennsylvania Railroad Junction, Richmond Junction, Kensington, Frankford, Washington or Reed street wharves (on the Delaware), or from the depots of the Pennsylvania Railroad Company, in the city of Philadelphia, at which such freight may be received, will be ten dollars per car of twenty thousand pounds or less, on ordinary freights from such points to the Centennial siding, in addition to the terminal charge of the Bureau of Transportation of the International Exhibition, ALL OF WHICH MUST BE PREPAID, as well as the freight and charges from the point of shipment.

Extraordinary freight, weighing two tons or more, requiring the use of a crane or extra handling, will be cared for under the direction of the shipper or his agent, and any additional expense for such extra handling or transportation must be paid by said shipper or agent, in addition to the charges specified above.

B. B. KROSTON,
General Freight Agent.

The Work of Freight Receiving at the Exposition.

The Philadelphia Public Ledger of Feb. 21, in an article setting forth the forward condition of the Exposition buildings and the readiness of foreign exhibitors to forward their goods, consignments of which are already on hand from many countries, laments the dilatoriness of home exhibitors, who seem inclined to crowd their shipments into a few days before the opening of the exhibition, which may cause a blockade of the admirable organization for the transportation and handling on the grounds. It says:

Such is the situation with the foreign commissions. They are in motion to utilize the days between now and the 26th of April, which is the limit of time within which articles can be received in order to have them placed properly prior to the 10th of May. Again, then, it may be asked if the mass of the American exhibitors are in readiness for motion, now when the great buildings are ready for their reception and occupancy? We wish it were within our knowledge to say the American exhibitors are ready. We trust they are, and most earnestly hope they are not relying upon that overconfidence which leads too many of our people into the mistaken belief that they can do in a month what it requires other people a year to accomplish. Do they give sufficient force to the fact that not less than 250,000 large packages of goods and articles are to be received by rail at the Exhibition grounds in the next nine or ten weeks, and are to be unloaded and distributed to their proper places over the surface of fifty acres of buildings? Have they contemplated what this means when translated into terms of transportation and of handling goods? It means the transportation, unloading, handling, distribution and placing of more than six thousand car-loads of goods—an aggregate train of forty-five miles—an average of a hundred car-loads a day for sixty days—two hundred car-loads a day for thirty days—three hundred car-loads a day for twenty days. Do the American exhibitors contemplate crowding their goods into the last twenty days, so as to enjoy the bustle and excitement of the distribution of three hundred car-loads of goods a day? It would be just like them; but that sort of excitement does not pay. The Centennial Board have the completest arrangements ever made in any country for the reception, unloading, distribution and placing of the goods for exhibition, and can handle, without confusion, more goods than were ever handled in any equivalent space of time. They are as far in advance with this as they have been in advance in the completion of the buildings. Yet still the American as well as the foreign exhibitors should get into motion at once, for the Exhibition Buildings are ready, and are now waiting for them to move.

The John Cockerill Works at Seraing.

The famous John Cockerill Company, of Seraing, Belgium, publishes what it calls the statistics of the establishment, dated Sept. 22, 1875. This says: The establishments of the Cockerill Company, at Seraing, Belgium, on the right bank of the Meuse, were founded in 1817. The capital of the corporation is about 15,000,000 francs (\$3,000,000). The works cover an area of 214 acres. The actual number of the force (regular employees and laborers) is about 8,750, rising sometimes to 10,000. The wages paid per year amount to more than 10,000,000 francs (\$2,000,000). The total motive power of 6,000 horse-power is produced by 259 steam engines. The daily consumption of fuel is more than 2,200,000 lbs. The yearly production of the works amounts to about 40,000,000 francs (\$8,000,000). The shops are included in 12 divisions and form the most complete system of the kind in existence. The General Manager is E. Sadoine. The first division includes the coal mines, employing 2,631 men and 24 steam engines and producing yearly 385,000 tons (of 2,000 lbs.) of coal. The second division covers the coke ovens, 180 in number, employing 216 men and 23 engines, and producing 100,000 tons of coke per year; the third the ore beds (iron chiefly or wholly), in the Belgian provinces of Liege and Namur, in Luxembourg, and in Spain, employing 600 men and 17 engines, and producing 240,000 tons of ore, 135,000 tons of it in Belgium; in the fourth division are the five blast furnaces, employing 320 men and 26 engines, and producing 60,000 tons of pig iron yearly; in the fourth the foundries, employing 270 men and six engines, and producing 6,000 tons of castings yearly; in the sixth division are the 85 puddling and reheating furnaces, employing 1,070 men and 55 engines, and producing yearly 35,000 tons of rails and iron beams and 11,000 tons of bar and plate iron; the steel works form the seventh division, including 8 Bessemer converters, 15 furnaces, 10 sets of rolls, 8 hammers and 2 blast furnaces for Bessemer pig, employing 1,240 men and 42 engines, and producing yearly 55,000 tons of bars, tires and nails, and 38,500 tons of steel ingots; in the eighth division are the forges, with 12 furnaces, 14 hammers and 80 forge fires, employing 220 men and 6 engines, and producing yearly steel cannon, locomotive wheels, parts of machinery, etc., amounting to 1,650 tons; the ninth division com-

prises the machine shops, employing 1,100 men, 25 engines and 350 machine tools, and producing yearly steam engines, machinery, and steel hoops for cannon of large caliber of the aggregate weight of 8,600 tons; the boiler shops form the tenth division, employing 560 men, 13 engines, 85 machine tools and 12 forge fires, and producing 22,000,000 lbs. of boilers and bridges of various patterns yearly; in the eleventh division are the ship-yards at Antwerp and Hoboken, employing 1,000 men, 5 engines and a variety of special tools for naval construction and ship carpentry, and producing from 6 to 14 sea vessels and river steamers yearly; while the twelfth and last division includes various services and the material used for the transportation, including 24 locomotives, 20 miles of railroad, and four steam barges of 300 tons burden, employing 900 men and 18 engines, and carrying 22,000 tons, besides as much more moved by rail. The establishment has besides 156 special employes, owns a hospital for 250 patients, an orphan asylum which provides for 55 workmen's children, a dispensary, and numbers of workmen's houses.

Up to the date of this statement, the Seraing shops had constructed 40,000 engines and other machines, besides 375 ships. They can turn out yearly 100 locomotives, 70 steam engines, 1,500 machines of various kinds, 8,800 tons of bridges, turntables, etc., 14 ships or river boats, or iron clads.

ANNUAL REPORTS.

Cumberland Valley.

This company owns a line from Harrisburg, Pa., southwest to Williamsport, Md., 82 miles, which is extended 12 miles further to Martinsburg, W. Va., by the leased Martinsburg & Potomac road. It also works under lease the Mechanicsburg & Dillsburg road, 8 miles, and the Southern Pennsylvania Railroad, from Southern Pennsylvania Junction to Richmond, with branch to Mercersburg, 23 miles, a total of 125 miles worked.

The property was represented as follows at the close of the fiscal year, Sept. 30, 1875:

Preferred stock.....	\$484,900
Common stock.....	1,292,950
Total stock (\$21.681 per mile owned).....	\$1,777,850
Bonded debt (\$4.295 per mile).....	382,300

Total (\$25,977 per mile).....\$2,160,150

There is no floating debt and the company has a contingent fund derived mainly from earnings and amounting to \$1,032,559.97, which is nearly all invested in the securities of its leased lines. There has been no change in the stock or bonds during the year. The expenditures on construction account for the year were \$49,188.41, and the cost of road, equipment and material on hand are reported at \$1,916,067.53, or \$23,367 per mile owned.

The work done, so far as reported, was as follows:

	1874-75.	1873-74.	Inc. or Dec.	P. c.
Passenger train miles.....	164,769	174,490	Dec.. 9,721	5.6
Freight train miles.....	168,220	193,224	Dec.. 25,004	12.9
Construction train miles.....	8,340	21,438	Dec.. 13,098	61.2
Total mileage.....	341,329	389,152	Dec.. 47,823	12.3
Passengers carried.....	376,133	392,352	Dec.. 16,219	4.1
Tons freight received at Harrisburg.....	159,179	.....	.....	.....
Tons freight forwarded from Harrisburg.....	166,230	.....	.....	.....
Tons coal carried.....	103,220	112,447	Dec.. 9,227	8.2
Tons iron ore carried.....	59,401	82,233	Dec.. 22,832	28.0

The revenue and expenses per mile on the main line were as follows per train mile:

	Passenger.	Freight.	All trains.
Gross earnings.....	\$1.3637	\$2.387	\$1.8500
Expenses.....	0.7326	1.1992	0.9635

Net earnings.....\$0.6311 \$1.1846 \$0.8865

The earnings of the Cumberland Valley Railroad proper for the year were as follows:

	1874-75.	1873-74.	Inc. or Dec.	P. c.
Passengers.....	\$186,422 75	\$203,876 47	Dec. \$17,453 72	8.6
Freight.....	315,653 50	369,495 40	Dec. 53,841 90	14.6
Mails, express, etc.....	23,999 90	29,938 18	Dec. 5,938 29	19.9
Total earnings.....	\$526,076 14	\$603,310 05	Dec. \$77,233 91	12.8
Working expenses.....	265,481 44	274,260 87	Dec. 8,779 43	3.2
Net earnings.....	\$260,594 70	\$329,049 18	Dec. \$68,454 48	20.8
Gross earnings per mile.....	\$6.416	\$7.387	Dec.....\$941	12.8
Net earnings per mile.....	3.178	4.013	Dec.....\$835	20.8
Per cent. of expenses.....	50.46	45.96	Inc.....4.50	9.8

The earnings of the leased lines were as follows:

	Earnings.	Expenses.	Net earnings.	Earn. per mile.	P. c. of exp.
Martinsburg & Potomac.....	\$13,813 08	\$12,974 96	\$838 12	\$1.151	93.93
Dillsburg & Mechanicsburg.....	20,659 05	12,198 20	8,460 85	2.892	50.04
Southern Pennsylvania.....	23,231 17	20,620 71	2,610 46	1.010	88.76
Total.....	\$57,703 30	\$45,793 87	\$11,910 43	\$1.342	79.37

The Dillsburg & Mechanicsburg show an increase, the others a heavy decrease, largely arising from depression of the iron business. The earnings of the main line were affected by the general depression of business and by a reduction in freight rates, especially on grain shipped to Philadelphia, which was necessary in order to prevent the agricultural interests of the country from being placed at a disadvantage in competition with the West.

During the year 1,005 tons of steel rails, 83 tons of re-rolled iron rails and 21,654 new ties were put in the track, the entire cost of the steel being charged to expense account. There are now 17 1/2 miles of steel in the track and 800 tons more are to be laid the current year. The passenger depot at Carlisle has been enlarged and a new one built at Chambersburg; a large paint shop has also been built at Chambersburg. New depots at Newville and Shippenburg are to be built this year. A new engine has been bought, 2 passenger and 15 freight cars built in the company's shops.

The income account may be summed up as follows:

Cash from previous year.....	\$276,342 21
Balance of accounts.....	77,747 35
Net earnings.....	260,594 70
Sale of real estate in Harrisburg.....	20,000 00
Materials used.....	16,677 22
Total.....	\$681,261 48
Dividends.....	\$177,480 33
Interest.....	26,181 25
State tax.....	11,553 36
Construction.....	49,188 41
Trustees' contingent fund.....	144,666 07
Balance.....	\$242,194 06

Of which \$170,862.72 is cash and \$71,331.34 balance of accounts.

The only accident during the year was a slight one to a freight train. Preparations are being made for the increased

passenger travel expected from the attendance on the Centennial.

Charlotte, Columbia & Augusta.

This company owns a line from Charlotte, N. C., southward to Columbia, S. C., and thence southwest to Augusta, Ga., in all 195 miles long.

The property was represented as follows at the close of the fiscal year, Sept. 30, 1875:

Stock (\$13.221 per mile).....	\$2,578,000 00
Bonds (\$7.736 per mile).....	1,508,500 00
Floating debt, balance (\$3.586 per mile).....	699,335 40

Total (\$24,543 per mile).....\$4,785,835 40

The debt has been reduced \$56,796.04 during the year. The President's report says: "We have on hand, unsold, \$492,000 first-mortgage bonds, and \$1,000,000 second-mortgage bonds. If shareholders and bondholders will subscribe for the \$492,000 first-mortgage bonds, and an equal amount of second-mortgage bonds, at an average price, of say, 70 cents (with an agreement on the part of the company that no more second-mortgage bonds shall be sold at less than 85 cents on the dollar), the floating debt will be cleared off, the stockholders in possession of first-class securities, yielding 10 per cent. on their cost, and the road placed in a condition to appropriate its surplus, after necessary outlays on its track, etc., to dividends on its stock. The total net earnings for the last four years were \$989,121.41, being an average, yearly net, of \$247,280.35; interest on \$2,492,500, at 7 per cent., \$174,475; excess, \$72,905.35, which is over three per cent. on the stock upon which the company is liable to pay dividends. It is apparent, therefore, that the project is feasible."

The earnings for the year were as follows:

	1874-75.	1873-74.	Inc. or Dec.	P. c.
Freight.....	\$367,532 62	\$383,574 09	Dec.. \$16,041 47	4.2
Passengers.....	195,605 78	190,397 95	Inc.. 5,207 83	2.8
Mails and express.....	32,342 80	24,375 00	Inc.. 7,967 80	32.7
Miscellaneous.....	18,352 32	16,185 43	Inc.. 2,166 89	13.3
Total.....	\$614,013 52	\$614,531 57	Dec.. 518 05	0.1
Expenses.....	364,009 27	388,800 67	Dec.. 24,791 40	6.4
Net earnings.....	\$250,004 25	\$225,730 90	Inc.. \$24,273 35	10.8
Gross earn. per mile.....	\$3.149	\$3.151	Dec..	2 0.1
Net ".....	1.382	1.188	Inc..	124 10.8
Per cent. of exps.....	59.28	63.27	Dec..	3.99 6.3

The sum of \$30,765.79 paid for taxes on the property and new iron rails was included in expenses. There were no similar items in the expenses for the previous year, so that the actual decrease was \$35,567.19, or 14 1/2 per cent. This reduction has been effected by care and economy in working, and the necessary repairs and renewals have been fully kept up. The local business showed an increase of about 19 per cent., showing a marked improvement in the condition and business of the country, and very nearly overcoming the falling off in through traffic.

The proposition for a lease of the road to the South Carolina Railroad Company was not considered satisfactory and was therefore rejected.

THE SCRAP HEAP.

The Hall Electric Signals.

The Boston Advertiser of Feb. 11 says:

"The Hall electric railway signals, which have just been put in operation from Boston to South Framingham on the Boston & Albany Railroad, were exhibited to a number of railroad men on Tuesday. The party which went consisted of about a dozen, among whom were Superintendents Barnes, of the Albany; Folsom, of the Providence, and Parker, of the Lowell Railroad; Mr. Briggs, of the Railroad Commissioners; Edward Abbott, formerly Chairman of the Railroad Commissioners; Mr. Parker, of Meriden, Conn., President of the Hall Signal Company, and other gentlemen interested in railroads or mechanism."

"The party left the Albany station on a special train at 10:05 a. m., and ran slowly to South Framingham, arriving there at about one o'clock. Stops were made on the outward trip to examine the workings of the first danger signal, about a mile out of Boston; again at a dangerous double curve near Cottage Farm; at West Newton to see the new passenger station, and also to view the workings of the signals there; at Wellesley, where one of the two electric battery stations on the road from Boston to Framingham is, and again at South Framingham. On the return trip the train was stopped at Brighton, where the greatest number of station appliances, such as signal bells, are found, and again at a crossing where a bell to warn passing teams has been placed in a box at the roadside. The utmost facility was afforded by Mr. A. W. Hall to his guests to examine all the details of the various instruments and signal machinery, and the party arrived in Boston at about two o'clock, and went to the United States Hotel to dinner, where an hour was very pleasantly spent."

"It is now about two years since the Hall railway signals have been used on any of the railroads running out of Boston, or in fact any railroads in the country. The manner of their operation has several times been described and explained in the Daily Advertiser, and it has come to be an admitted fact that the principle of the system is correct, and the numerous faults which have been found with it arise from the erroneous workings of the mechanism, which is very delicate. These faults, which could only be discovered after a practical application of the system had been made on some road, are being corrected as fast as found out, and the rapid growth toward perfection which the machinery has made since it was put on the Eastern road indicates that there will be but little fault to find with it in a short time. The Hall Company only asks the roads to have a little patience, and it will furnish them a system of signals better than was ever seen before. The Eastern road has the signals from Boston to Salem, a distance of 18 miles, and, although it had some trouble with them the first winter, they work well enough now since the batteries have been placed where they cannot freeze. The Lowell road has them out as far as Woburn watering station, and, although they do not work to perfection as yet, they are still useful. The Albany road has a better working system than either the Eastern or Lowell, since it has the advantage of improvements not known when the first two systems were put in operation. A cut-off is now being applied to each signal on the road, so that if one gets out of order it need affect no other. The Old Colony road has the system applied in its simple form over four miles of its track, the complex mechanism of bells at stations and other appliances being left off. It works here to a charm, less trouble being found than on any other road. The company does not intend in the future to operate its system with the numerous appliances it did at first, but to make it simpler and more effective."

A Station Agent in Spite of Himself.

The Indianapolis Journal says: "The general manager of one of the Indianapolis lines was asked yesterday to grant a man a pass who lives near a point where accommodation trains occasionally stop for passengers. There being no station, a small platform has been built; but the applicant says passengers, while waiting, come into his house, muddy his carpet, play on his piano, and warm by his fire, hence he thinks himself and family entitled to free passes over the line. The manager has taken the matter under consideration."



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Editorial Announcements.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITORS RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

AMERICAN AND EUROPEAN LOCOMOTIVE ENGINEERING.

It is very much to be regretted that at our Centennial Exhibition there will, in all probability, be no representation whatever of specimens of European locomotives. American engineers, at least those who have not travelled in Europe, have gradually fallen into a self-complacent state of mind with reference to our own productions in this department of engineering, which, perhaps, a more intimate acquaintance with what is done in Europe would show to be quite unjustifiable. In recent numbers of *Engineering*, a very full description and elaborate illustrations have been published of a tank engine built for the London, Brighton & South Coast Railway at the works of the company, from the designs of W. Stroudley, Locomotive Superintendent of that line. This engine belongs to a type which is almost unknown here, and which, it is true, is in some respects not at all adapted to our lines. It has six wheels, four of which are coupled and act as drivers. The leading wheels are placed immediately behind the smoke-box, and are coupled to the main driving-wheels, which are just in front of the fire-box. The two pairs are 7 ft. 7 in. from center to center, and 5 ft. 6 in. in diameter. The trailing wheels are located behind the fire-box and as near to the latter as they could be placed. The whole length of the wheel-base, which is entirely rigid, is 15 feet, and it is chiefly owing to this long, rigid wheel-base that the engines are not adapted to our lines with sharp curves. Besides this, there is no equalizing arrangement connected with the wheels or springs, so that on rough roads, such as we have in this country, the distribution of weight on the wheels would be very irregular.

The cylinders are 17×24 in., located inside the frames and connected to a crank-axle. This plan of construction is now quite obsolete here and probably for very good reasons. Water is carried in two side tanks, extending from near the back end of the fire-box forward to near the leading wheels. The capacity of the two tanks is 860 gallons, which would be quite insufficient for our long runs. The engines described are employed chiefly between London Bridge and Victoria, a distance of 16½ miles. They, however, also run between London and Brighton, with excursion trains, a distance of 50½ miles.

The engines weigh, empty, 76,944 lbs., of which 55,90 lbs. is on the driving-wheels. It should be borne in mind, however, that this weight represents that of engine and tanks, and therefore in order to make a just comparison we must take the weight of our own engines and tenders as the basis. Now a 17×24 in. cylinder engine of the ordinary American type will weigh about 64,000 lbs., and the tender, empty, about 22,000 lbs., or a total of 86,000 lbs. Of this about 42,000 will be on the driving-wheels. We have, therefore, in the case of the locomotive for the London, Brighton & South Coast Railway, about 72½ per cent. of the total weight on the driving-wheels, whereas American engines have only 48½ per cent. It is, of course, true that the mere increase of adhesion will not alone increase the working capacity of an engine; but, as we shall see presently, in the construction of the boilers, the engines described have realized some very important advantages which are usually lost sight of here. Before referring to the boiler, however, we wish to call attention to the fact that the difficulty growing out of the long and rigid wheel-base could be overcome by substituting a vibrating truck or bogie with two pairs of wheels instead of the single pair of trailing wheels employed. This would make it possible to extend the wheel-base six or seven feet longer without difficulty, which would give more room behind the engine for water tanks and fuel, and also give another pair of wheels, to carry an additional quantity of water and coal. With an equalizing apparatus between the driving-wheels, there would be no trouble in running such an engine over American roads, while at the same time it would give us the advantages referred to of utilizing a larger proportion of the weight for creating adhesion. In fact, with proper proportions, the whole weight of the boiler and machinery can be carried on the driving-wheels, and the water and fuel, which form a variable load, on the truck. By lengthening out the wheel-base the disturbing effects of outside cylinders will be felt less than if the wheel-base is as short as in the engines described. In our American practice there is no trouble whatever in using outside cylinders with a wheel-base of from 19 to 22 feet. There is, therefore, no difficulty whatever in availing ourselves on our American roads of the advantages which Mr. Stroudley has realized in his engines by somewhat simpler means than are open to us.

In examining the details of the construction of these engines, which have been so admirably illustrated by our contemporary, there are many other points of very great interest to American engineers, and a comparison of some of them is not at all flattering to our enterprise and ingenuity. The truth is, in the construction of many of the details of locomotives, American engineers are falling behind their foreign contemporaries. This is due to the fact that of late years we have in a very great measure stood still, while abroad the ingenuity and skill of locomotive constructors has been constantly exercised on new designs and on engines intended to work under somewhat new conditions.

The boilers of the engines described have some advantages which are nearly always sacrificed in American engines. The fire-boxes, for example, are 49 in. wide outside of the fire-box shell and between the frames. This gives a grate 41 in. wide, while on our engines they are seldom over 35½ in., so that the grate area of these foreign engines is 15½ per cent. greater than that of ours. This advantage is gained by the use of a plate frame on the sides of the fire-box, and by hanging the springs below the axles. With the arrangement of the driving-wheels described, and the use of a truck, it would, however, not be necessary to hang the springs below the axles, as a transverse spring could be employed over the main-axle which could be placed above the boxes. The barrel of the boiler is 49 in. in diameter and is made "flush" or straight on top, with a small dome just in front of the crown-sheet. The latter is made of an arched form, and is stayed by through stay-bolts from the outside casing. In order to secure a good attachment for the stay-bolts, many of which do not stand at right angles to the surface of the crown-sheet, the latter, which is made of copper, is dished out or set for a circle of about 1¼ in. around each stay-bolt, so as to bring the surface of this circle at right angles to the axis of the stay-bolts. The latter are screwed in from the inside of the fire-box and have a head on that side which bears against the under side of the crown-sheet. A nut is screwed down on the top side of the crown-sheet. In this way a thoroughly good job is made of this manner of staying, and all the heavy and cumbersome crown-bars are dispensed with, and a very considerable portion of their weight may be put into other parts, such as the waist of the boiler. It must be remembered, that if by a better arrangement of the parts of an engine the adhesion is increased, in order to make it available the boiler capacity must also be increased in the same proportion. This, it is thought, has, to a certain extent been done by the method of construction adopted in the engines referred to. It is true that the heating surface, which is 948 square feet, is not in proportion to the weight on the driving-wheels—that is, taking ordinary American practice as our guide—but by increasing the

grate surface, so as to get as much room as possible for combustion, the boilers have a very great steam-producing capacity in cases of emergency, although such a boiler, perhaps, would not work as economically as it would if the proportion of heating surface to grate service was larger, so that the products of combustion would be exposed to more surface for absorbing their heat. The weight of all locomotives is limited, and therefore the size and steam-producing capacity of the boiler are governed to a very great extent by its weight. Every pound that is saved by improved forms of construction of any of the parts of the locomotive enables us to increase the weight and steam-producing capacity of the boiler, and in this way, if the adhesion is sufficient, the capacity of the engine will be increased.

In the details of the boiler of Mr. Stroudley's engines, there are many points of interest, and to quote from the description in *Engineering*:

"The longitudinal joints of the barrel are double riveted butt joints, with inside and outside covering strips, the outside strips being countersunk nearly through so as to shorten the parallel portion of the rivets and to insure a good fit. * * * The dome ring itself is very much stronger than those usually adopted, it being of such dimensions as to bring up the sectional area of the metal across the man-hole to be slightly in excess of the area due to a solid plate. * * * Mr. Stroudley has for a long time made it a practice to drill all the rivet holes in his boilers, the holes being drilled after the plates are put together, so that they are perfectly true. The drilling of the rivet holes is done by a radial drilling machine."

We observe that most of the locomotive engineers who aspire to doing really first-class work are now drilling their boiler plates. Laying aside the vexed question whether punching really injures the plates or not, it is certain that drilling is the only method of doing accurate work. When the holes are punched every engineer is at the mercy of his workmen, and the least carelessness on their part will result in bad work, which in boilers always means dangerous work. Such work too is always certain to be hidden out of sight, and discovery is impossible and inspection useless after the work is done.

The furnace door presents some novel features, which we fear we will not be able to make clear without an engraving, which will be published in a future number.

To quote again from *Engineering*:

"Mr. Stroudley has for a long time discarded the use of gauge cocks, and made it his practice to fit his engines with two gauge glasses instead. This is, we consider, a decidedly good plan, as, if a gauge glass breaks a driver can go on working with the other glass and replace the broken one at his convenience."

The cylinders are cast with the back covers, stuffing boxes, etc., all solid. This form of construction, especially in engines in which the cylinders are located close up to the leading wheels, offers some advantages, as several inches of room can be saved and the weight be brought closer up to the wheels than is possible if the cylinder head is bolted on in the usual way.

Although the engines are driven from a cranked axle, it is said that the builder "entirely avoids the use of keys in his axles, the wheels being fixed simply by forcing them on the axles by hydraulic pressure. He also fixes his crank-pins in a similar way, the rule being that axles and crank-pins shall require a hydraulic pressure of 12 tons per inch in diameter to force them in their places. We recommend our practical friends to make a note of this rule.

There are a number of other details in the construction of these engines which are worthy of the consideration of American locomotive builders, but which require illustrations to make them plain. These we must reserve until next week.

EQUAL RATES TO NORTH ATLANTIC PORTS.

The Massachusetts Railroad Commissioners in the part of their last report entitled "The Freight Competition of 1875" (which we copied last week) say that, before any permanent combination of trunk lines can be arrived at, it must be accepted as an essential principle that there shall be an absolute equality of the Atlantic seaboard centers as respects the movement of merchandise to and from certain of the great distributing points of the West, meaning, we suppose, that the rates to and from Chicago, Milwaukee, Cincinnati and St. Louis should be the same for Boston, New York, Philadelphia and Baltimore. At present, rates on fourth-class goods and grain—the great bulk of the eastward shipments for export—are 5 cents, or about 10 per cent. higher to Boston than to New York, 9 cents higher than to Philadelphia, and 11 cents higher than to Baltimore. West-bound rates are the same from Boston and New York, but lower from the other two cities. With the differences as they exist, Boston gets very little grain for export, and not a very large amount of other produce, and its shipments to the interior are chiefly of merchandise manufactured in the vicinity. Baltimore and Philadelphia do a considerable export business, though trifling compared with that of New York, and Baltimore has a considerable trade with the West—chiefly in sugar and coffee.

The Massachusetts Commissioners argue that the difference in distance between New York and Boston lines is but 5 per cent., while the difference in rates to those cities

is nearly 12 per cent., and that the crossing of the Alleghenies on the way to Philadelphia fully counterbalances the greater distance to New York.

If all the Northwestern traffic originated at one point, or if the difference in distance from one given sea-port to each of the half-dozen chief Northwestern cities was the same, the problem, so far as it depends upon difference in distances, would be easily solved. But it is far otherwise. Let us compare the distances:

	To Cin- cinnati.	To Chi- cago.	To St. Louis.	To In- dianapolis.
From Boston.....	926 miles.	1,001 miles.	1,227 miles.	985 miles.
From New York....	787 "	918 "	1,054 "	825 "
From Philadelphia..	668 "	823 "	975 "	736 "
From Baltimore....	589 "	800 "	929 "	701 "

Here all the distances are given by the shortest existing all-rail routes, which govern the rates. Thus we see that Boston is 10 per cent. further even from Chicago than New York, and not 5 per cent., as the Massachusetts Report puts it, doubtless on the basis of the New York Central route, which is the shortest route to Boston indeed, but not the shortest to New York. By this route, however, the distance from Boston to Chicago is 6 per cent. greater than the distance from New York to Chicago, while the 201 miles from Albany to Boston have many heavy grades and the 142 from Albany to New York are over one of the easiest roads in the world.

Chicago, however, makes the most favorable comparison. The Atlantic coast from Boston to Baltimore makes an acute angle with the east and west roads, so that the Western towns near the latitude of Baltimore are very much nearer to that seaport than to the harbors further north. Thus it is 926 miles from Boston to Cincinnati, but only 589 from Baltimore; the former place has a disadvantage in distance amounting to 57½ per cent., and it will certainly be impossible to maintain Baltimore-Cincinnati rates at the same level as Boston-Cincinnati rates. So Boston as compared with Baltimore is 26 per cent. further from Chicago, 32 per cent. further from St. Louis, and 38 per cent. further from Indianapolis. Differences as great as these will doubtless prevent the establishment of equal rates to and from all these ports so long as the southern lines (including the Pennsylvania as well as the Baltimore & Ohio) have strength left for a contest.

The differences are least between the Boston and the New York routes. Boston is 10 per cent. further from Chicago, 17 per cent. further from Indianapolis, 15 per cent. further from St. Louis and 22 per cent. further from Cincinnati. Thus Chicago is the only place to which the difference in distance does not exceed considerably the difference in rates in favor of New York, while the difference, such as it is, exists only on east-bound freight, and even this is often virtually destroyed on grain by rebates paid by the Boston railroad on grain exported.

Of course distance is not the only controlling circumstance. The railroad companies accept the lowest prices where a cheaper route is open to traffic which would divert the freight from the railroad if higher rates were charged. Now New York has such a route, and Boston decidedly has not. The lake and canal route ends in New York harbor, but does not approach within 200 miles of Boston. There is, therefore, a necessity for a reduction of rates to New York which does not exist in the case of Boston. What we may call the natural Boston business the railroads are sure of: that which would be diverted to New York or other ports by higher Boston rates will give the carriers—all but one, and that the Massachusetts road—more traffic, that is a longer haul, than if it went to Boston. Thus the trunk lines have no interest in cultivating Boston traffic so far as it competes with New York traffic. The Grand Trunk has, and it is its power and the great influence of the Boston & Albany Company, doubtless, that have kept the rates as favorable for Boston as they have been hitherto.

Another material reason for favoring one place more than another is the evenness of its traffic in the two directions. If a car sent with a load to New York has one chance in three of getting a return load, while if sent to Boston it has but one chance in four, then, with equal rates to both places it would earn from the round trip on an average 6⅔ per cent. more if sent to New York. What the differences in this respect are, we do not know, but from the varied character of New York commerce and its extent, it is natural to suppose that, taking the whole year round, it is easier to get a return load there than anywhere else.

If rates were made proportional to distance, Boston probably would get little of the business for which the Atlantic ports compete west of the Hudson River. With such rates, the trade of each port would tend to monopolize a certain district to itself. Baltimore and Philadelphia would absorb the business as far north as Indianapolis and St. Louis, while competing for that further north. But the individual interests of carriers and of cities alike tend to prevent this. Each wants a share in the traffic of all the places which it can serve with any facility, and so each lessens its profits on the business of the places whose most natural outlet is elsewhere. Boston can secure most of

the Canada business east of Montreal, doubtless, and that of the northern New England States, but it has to struggle for everything further west, and some one must sacrifice something on its export and import business with points south of the direct route from Albany to Chicago; it may be the merchants, and it may be the carriers, and is likely to be both. The adjustment of rates thus becomes a most complicated problem for the railroads, especially when one line carries to more than one port, as the New York Central & Hudson River is the chief carrier of Boston freight as well as a chief carrier of New York freight; and as the Pennsylvania extends to New York, Philadelphia and Baltimore. The New York-Cincinnati rate may be made unduly low, or what appears to be so, to enable New York to compete with Baltimore for Cincinnati business; but when that is done New York must not complain if a similar allowance is made in favor of Baltimore on the traffic of more northern cities. That there is an accurate balancing of advantages, no one can pretend; the problem is too complicated and the elements too uncertain to make that possible. But we may be sure that no settlement on the basis of equal rates to all points will last if thereby any considerable traffic should be diverted from any port, as would surely be the case. Baltimore would export very little grain if rates were the same to it as to New York; and the Baltimore & Ohio Railroad certainly will not sacrifice without a struggle the large business which it has painfully built up. The Pennsylvania need not suffer much from a diversion from Baltimore or Philadelphia to New York; but a diversion to Boston would be almost a total loss to it as its connections now are. For the New York Central the movement would simply mean that it should receive a smaller rate of profit for the sake of diverting business to a route on which it would have a haul of 300 instead of 440 miles. It might well favor the establishment of Baltimore and Philadelphia rates equal to those from New York, however, as this would tend to increase shipments to New York and Boston, which largely go by its road, while it has no share in Baltimore and Philadelphia traffic.

A Pocket Railroad Account.

Mr. Thomas D. Maurer, the Auditor of the Texas & Pacific Railway, has prepared for the use of officers, especially the accounting and general officers, of his company, a pocket account book, which we may call a form for a continuous current railroad report of traffic, earnings and expenses. It is a fat blank book, 4x7 in., in morocco tupe, with printed headings and rules, to fit it for entries for the most important results of the current business of the road for each month.

The first two pages for each month are to contain a statement of earnings, having vertical columns for the figures of the current and the preceding years, the increase, the decrease, the earnings per mile for both years, and the per cent. of increase and decrease. The titles of the entries in these columns are: Gross earnings, operating expenses and net earnings for the month, and the same from the beginning of the company's fiscal year to the end of the month; separate statements of earnings from every source for the month and for the part of the year ending with that month. Next follows a "statement of operations" for the same period, giving total revenue for freight, revenue from local freight and from through freight separately, average revenue per ton, and average per ton of local and per ton of through freight, and revenue per ton per mile, average, local and through; then the number of tons hauled, together with the number of local and through tons, the number of tons hauled one mile, similarly divided between local and through, and the average distance hauled, stated in the same way. Similar statements are made of passenger earnings and passenger traffic, and the "statement of operations" closes with a statement of the earnings, operating expenses and net earnings per ton and per passenger per mile. All these figures, like those for receipts, are to be given for two years, with statements of increase or decrease and its percentage.

The third division is headed "Engine Statistics." It has blanks for the mileage of trains of every kind the earnings per mile of traffic trains, the expenses and the net earnings; and the cost per mile run for each of the six items "repairs," "engineering and firing," "watching and cleaning," "oil and waste," "fuel," and "water supply"; the miles run per cord of wood and per pint of oil. "A detailed Statement of Operating Expenses" covers ten pages, having 32 heads under "Conducting Transportation," again summarized under two general heads of "Labor and Material," the latter being given for the part of the fiscal year expired as well as for the month; 23 heads under "Motive Power," summarized as above; 17 heads under "Cars;" 29 heads under "Maintenance of Way," and 11 under "General Expenses." We have thus a division of expenses under 112 different heads, which is more minute than can be found in the reports of most companies. These are again summarized under the general heads of "Conducting Transportation," "Motive Power," "Maintenance of Cars," "Maintenance of Way" and "General Expense," and here the percentage of each expense is given. These, like the other statements, are given for two years, and per mile of road as well as in gross—a matter of very great importance on a growing road. A statement of the percentage of operating expenses concludes this expense account.

Next comes a statement of the amount of freight forwarded from each station—cotton, grain, miscellaneous agricultural products, live stock, miscellaneous animal products, forest products, products of mines, quarries and clay-beds, manufactures,

railroad materials, general merchandise, total tonnage and revenue heading the vertical columns; there is a similar table for freight received, and one for passengers from each station in which, besides the number of passengers from each station, is given their mileage and the revenue therefrom separately for coupon and local passengers, as well as the totals of the two. The last statement is of expenses for construction and equipment, having 36 headings, with a comparison with the same month of the previous year. Four pages are left blank for "Remarks" after each month's account.

Here we have on about 25 little pages a form for a report in many respects elaborate, as easy to refer to as a dictionary, and presenting results ready wrought out, so that the position of affairs may be seen at a glance, and compared with that of the previous year, and, when these books shall have been kept for some time, with any previous year, without any calculation. There is nothing provided for here which every company should not keep in its accounting offices, but this book has the special advantage that it may be taken from those offices, may be carried in the pocket, pondered in spare moments, referred to anywhere and at any moment to establish or ascertain a fact, and serve generally as a sort of ever-present reminder to those agents of the company who are responsible for the conduct of its business, and especially its general officers and those in its commercial departments. If traffic has fallen off anywhere, it is made manifest, the place and the kind of traffic are easily ascertainable, and inquiry can be made definitely into the causes. So with expenses of all kinds. With such a book, promptly filled, a railroad manager would be able to hold his subordinates strictly accountable in a manner not easy when a special inquiry has to be made into the facts of each suspicious case, which, moreover, may not attract attention at all if there is no such clear and systematic summary of accounts always under the eyes of the officers. A tour of inspection made with such a book in the pocket, and well examined before landing at each station, might be made a formidable thing to negligent subordinates, and a profitable one to both superiors and subordinates. One of the greatest difficulties of a railroad manager is to know definitely what is being done on his road. The vastness of its operations makes it impossible to comprehend them even if they are fully recorded unless they are clearly and systematically summarized so as to present briefly the significant facts. The form wrought out by Mr. Maurer is a step in this direction, which may well be followed in other railroad companies.

Foreign Railroad Notes.

The Commission of Inquiry on Railroad Tariff Reform in the German Empire has submitted a report of its proceedings and conclusions, which latter are included in the following eleven propositions:

I. In accordance with Article 45 of the Imperial Constitution, the introduction as early as possible of a uniform tariff regulation on all German railroads is to be considered an indispensable necessity.

II. The uniform tariff regulation is to be reached only in the way of a compromise between the existing systems.

III. The compromise is a general open-car-load class of quantities of 11,000 and 22,000 lbs. for freight of every kind, with a suitable addition to be fixed upon for the case of the same quantities of freight in covered cars.

IV. Together with this general car-load class, a number of car-load classes should be introduced for articles specially designated (special tariffs), with rates variously reduced, as well for local as for through traffic.

V. Besides these, express, freight and single articles should be charged increased rates, the latter rated in one or two classes.

VI. Bulky freight should be subject to a special treatment involving a suitable increase of rates, and for such articles a uniform and permanent nomenclature should be prepared by the supervising officials, to be submitted for revision.

VII. For the unit rates for all separate classes of the tariff system, maximum rates should be established, the roads having liberty to lower these rates freely.

VIII. As a rule, the freight rates should be composed of a distance rate and a terminal charge.

IX. Differential and exceptional tariffs are permissible, but must be subject to the approval of the supervising officials.

X. a. No tariff may be used, and especially no differential or exceptional tariff, which has not been published previously in accordance with the regulations.

b. The publication of the tariffs is to be regulated uniformly by legislation, and for all publications of this kind a single central organ is to be designated.

c. Measures should be established by legislation which shall effectively guarantee against the use of tariffs not regularly published and against the evasion of published tariffs by the subsequent return of a part of the freight (rebates, etc.).

XI. A previous publication for six weeks should be required by law before any advance of tariffs can go in to effect.

The Imperial Parliament of the German Empire having decided that the railroads of the Empire must carry free of charge for the Post Office Department packages weighing not more than 22 pounds, which enables the Post Office to make a profit on packages at low rates, there is a movement among the railroads to compete actively with the Post Office for such package traffic, which in this country is almost wholly in the hands of the express companies. The railroad companies seem to have been made liable to perform this service by the terms of their original charters, or the laws in force at the time, requiring them to carry mails free, at a time when packages were not admitted into the mails, and no one supposed that they ever would be. Now the railroad companies argue that if they can get anything, however small the amount, for carrying packages, they will do better than to let them go in the mails, when they will carry them just the same, but will get nothing for it. It appears that the machinery for the col-

lection and prompt delivery of packages is lacking on the German railroads, so that at present the post office has the advantage in these particulars; and the organization of such machinery on the part of the railroads is considered indispensable to a successful competition. As yet, nothing seems to have been done, but there is a serious discussion of the question, and it is suggested that the State railroads, as well as those belonging to corporations, will find it advantageous to join in the movement. Very few of the railroads are owned by the Imperial Government, which conducts the Post-Office Department; and a competition between a State railroad and the mails would be like one between a railroad owned by Massachusetts and the United States mails.

The Louis of Hesse Railroad has recently introduced (to meet the competition of the post office, it is supposed) a new express or package business, by passenger trains, and including delivery at destination. The packages must weigh not less than 1 nor more than 66 lbs., and the rates are:

	Up to 62 miles.	From 62 to 99 miles.
For packages weighing		
1 to 13 lbs.	5 cents.	10 cents.
13 to 35 lbs.	10 cents.	20 cents.
35 to 66 lbs.	20 cents.	40 cents.

For delivery in towns of more than 10,000 inhabitants an additional charge of 2½ cents is made, and half as much in other places. The shipper must pay the freight charge, the consignee the delivery charge. Unless a special statement of value is made, no more than 33 cents per lb. will be paid by the railroad for any lost package; for one day's delay in delivery, 6 cents per pound, for two days' delay, 12 cents. If not delivered within two days after it was due, it will be paid for as if lost.

The German Empire has one mile of railroad to 0.535 square miles of area and 2,608 inhabitants; Italy, one mile of railroad to 1.18 mile of area and 9,516 inhabitants.

A project for a railroad high school in Prussia, introduced many months ago, has been revived recently.

An accurate statement of the number and length of the Russian railroads at the close of 1874 is given—and given for the first time, it is said—in a recent report of Mr. Schiessel, Secretary of the Austrian Embassy at St. Petersburg. According to this there were 49 roads, with an aggregate length of 12,069 miles of road; 2,829 locomotives, 5,112 passenger cars and 48,614 freight cars. The average cost per mile has been about \$78,500. Three of the roads are of 4 ft. 8½ in. gauge, three of 3 ft. 6 in., one of 6 ft., and all the others of 5 ft. gauge—the latter being the standard Russian gauge. Most of the roads have the interest on their capital, or part of it, guaranteed by the Government, usually at the rate of 5 per cent. In 1873 the Government had to pay 28 per cent. of the amount guaranteed. A few of the roads are extremely profitable, but on most traffic grows very slowly. In 1872 the gross receipts were 12½ per cent. of the capital, of which 9½ per cent. was subscribed by working expenses, leaving 2½ per cent. as the average profit.

A Railroad Commission for New York.

A bill has been introduced into the New York Senate providing for a State Railroad Commission similar in constitution and powers to the Massachusetts Commission, or rather similar to it as it would be if its recent recommendation of the enforcement by law of a uniform system of keeping railroad accounts should be carried out; for the New York bill gives special prominence to this feature, providing for the employment of an accountant by the Commissioners, "whose duty it shall be under the directions of the board to superintend the methods by which the accounts of corporations operating railways or street railways are kept;" and directing that "such Commissioners shall, as soon as practicable after their appointment and entering upon the discharge of their duties, prescribe a system upon which the books and accounts of corporations operating railroads shall be kept; and it shall be their duty, from time to time in each year, to examine the books and accounts of all corporations operating railroads or street railways, to see that they are kept on the plan prescribed under this section; and a corporation refusing to submit its books to the examination of the Board of Railroad Commissioners, or neglecting to keep its accounts in the method prescribed by said board under the authority of this act shall be liable to the penalty of \$1,000 for the first offense, and after the second offense the said Commissioners shall report the facts to the Attorney-General, who may proceed, if he sees fit, to forfeit the charter or incorporated rights of the offending corporation, such second offense being made equivalent to the violation by such offending corporation of a material part of its act of incorporation or charter."

These provisions are apparently copied from the draft of a bill submitted by the Massachusetts Commissioners in their last report. The Commissioners are authorized to change the present form of report to the State Engineer and Surveyor, which was established by statute 26 years ago; but must give six months' notice of such change to the railroad companies; and it is made their special duty to see that the returns are accurate. "When the return received from any corporation is defective or probably erroneous, the board shall notify the corporation to amend the same within fifteen days." Ample provision seems intended to enable the board to do its work effectively. A chief clerk at \$3,500 a year, three others at \$2,000 each, and an accountant at \$3,000 are named, and the board is to have authority to employ engineers and experts temporarily in conducting any investigation, while the Commissioners themselves are to have salaries of \$10,000 each; all the expenses, however, except office rent, are to be assessed upon the railroad companies.

A Commission of this kind might be very valuable, doubtless, and more so in New York than in most other States; but its value would depend wholly upon its composition, and with salaries of ten thousand dollars a year the places would doubtless be scrambled for by politicians with great vigor; and the professional politician would make either a useless or a most harmful Commissioner in nine cases out of ten. The use of

RAILROAD EARNINGS IN JANUARY.

Name of Road.	Mileage.					Earnings.					Earnings per mile.				
	1876.	1875.	In.	Dec.	Per c.	1876.	1875.	Increase.	Decrease.	P. c.	1876.	1875.	In.	Dec.	P. c.
Central Pacific.....	1,315	1,293	29	...	1.7	\$961,000	\$963,938	...	\$2,933	0.3	\$731	\$746	...	\$15	2.0
Chicago, Milwaukee & St. Paul.	1,399	1,399	...	...	...	527,000	466,101	\$60,899	...	13.1	377	333	...	\$44	13.1
Cincinnati, Lafayette & Chicago	75	75	...	...	...	32,256	33,790	...	1,534	4.5	430	450	...	20	4.5
Denver & Rio Grande.....	120	120	...	...	...	33,502	30,801	12,761	...	61.4	280	173	107	...	61.4
Illinois Central.....	1,109	1,109	...	...	...	688,447	697,222	...	8,776	1.5	631	639	...	8	1.5
Indianapolis, Bloom. & West'n.	344	344	...	...	...	133,386	116,542	16,844	...	14.5	389	339	...	49	14.5
Kansas Pacific.....	761	761	...	...	...	209,099	162,737	46,362	...	27.8	278	214	...	64	27.8
Marietta & Cincinnati.....	314	314	...	...	...	167,263	152,806	14,457	...	9.5	533	486	...	47	9.5
Michigan Central.....	84	84	...	...	...	518,567	500,902	17,665	...	3.5	645	623	...	22	3.5
Missouri, Kansas & Texas.....	786	786	...	...	...	256,459	198,099	58,360	...	29.5	326	252	...	74	29.5
Nashville, Chattanooga & St. Louis	342	342	...	...	...	173,385	149,180	24,205	...	16.2	507	433	...	71	16.2
Ohio & Mississippi.....	615	393	222	...	66.5	315,795	251,396	64,399	...	25.5	513	640	...	127	19.8
Rome, Watertown & Ogdensburg.	333	318	115	...	32.8	80,728	67,801	12,927	...	19.6	242	310	...	68	21.9
St. Louis, Alton & Terre Haute.	71	71	...	...	...	39,313	57,201	...	17,888	31.3	554	806	...	252	31.3
Belleville Line.....	665	665	...	...	...	352,209	250,789	101,411	...	40.4	514	366	...	148	40.4
St. Louis, Iron Mt. & Southern.	304	304	...	...	...	245,538	226,086	19,447	...	8.5	489	413	...	76	18.5
St. Louis, Kansas City & North'n	849	849	...	...	...	80,842	84,536	...	3,694	4.4	232	242	...	10	4.4
St. Louis & Southwestern.....	237	237	...	...	...	99,208	71,437	27,771	...	38.9	419	301	...	118	38.9
Toledo, Peoria & Warsaw.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals.....	10,163	9,804	359	...	3.7	\$4,513,978	\$4,383,066	\$130,912	\$130,912	10.6	\$474	\$444	...	\$30	6.8
Total increase.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

such a Commission, having no administrative authority further than that necessary to collect facts, is chiefly to study the transportation question for the Legislature and the community—collecting the facts and presenting them intelligibly, and making recommendations which will carry whatever weight may be due to them or to the character of the commissioners, and thus give a solid basis on which individuals in the community and their representatives in the Legislature may act. Thus to be of value, the Commissioners must be or become experts; the becoming is not such an easy matter, and actual experts usually are the last men thought of for such positions.

Record of New Railroad Construction.*

This number of the Railroad Gazette has information of the laying of track on no railroads as follows:

Prospect Park & Coney Island.—This railroad, constructed for excursion passenger traffic, was completed early in the summer from the terminus of the street railroad of the same name near Prospect Park, in Brooklyn, N. Y., south 6 miles to Coney Island. It was erroneously described in this paper at the time as a street railroad reconstructed.

Anderson, Lebanon & St. Louis.—The first track is laid from Anderson, Ind., westward 12 miles.

Little Rock & Fort Smith.—Extended from Altus, Ar., west to Ozark, 5 miles.

Pueblo & Arkansas Valley.—Extended from Neperte, Col., to Chico, 12 miles.

Denver & Rio Grande.—The track (of 3 ft. gauge) is extended 48 miles southward to the Cucharas, 50 miles from Pueblo, Col.

Nevada County.—The track (of 3 ft. gauge) is laid 19 miles, 7 miles more than reported heretofore, from Colfax, Cal., of which 13½ miles were laid in 1875 and 5½ miles the present year.

This is a total of 90 miles of new railroad, all but 7½ miles constructed in 1876, and bringing up the total of this year so far to 182 miles.

The total constructed in 1875 is brought up by the Nevada County extension and the Prospect Park & Coney Island to 1,545 miles.

CAR WHEELS AND BRAKES ON PERUVIAN RAILROADS. At least on those with long, steep grades, encounter a peculiar and serious difficulty in the excessive wear of brake-shoes and the injury done to car wheels in descending the long grades of the mountain lines. On the road from Arequipa to Puno, for instance, trains have to run down grades of 2 and 3 per cent. for some 80 miles, and it is necessary to have the brakes on nearly the whole distance. The brake-shoes are made of willow wood and are well soaked in water, but even then they will frequently not last out one trip, but have to be changed at the half-way station. On the Lima & Oroya road a hollow shoe has been tried to prevent heating, a current of cold water being kept constantly passing through the shoe. It has been partly successful, but the wheels still heat to a great and injurious extent. Of course, where the brakes are used in this way it is difficult to prevent the wheels from being skidded, and flat spots worn in consequence are of frequent occurrence. Under these circumstances the wheels are short-lived.

JANUARY EARNINGS are reported in our table for 18 railroads with 10,163 miles of road—nearly one-seventh of the mileage of the country. Thirteen of them show an increase of earnings as compared with 1875, and the decreases are small except in the case of a single road. The average earnings per mile have increased from \$444 to \$474, or 6.8 per cent. January earnings last year were very bad, so that the returns this year are not necessarily good, but only comparatively so. But if we consider net earnings, doubtless the increase has been very much greater, for the winter a year ago was exceptionally severe, and working expenses were greatly increased thereby; while this winter has been exceptionally mild, and there have been no obstructed roads to dig out, rolling stock broke in drifts, and rails broken with the thermometer below zero.

A Ticket Raffle.

Mr. B. W. Wrenn, General Ticket Agent of the Western & Atlantic Railroad, publishes to advertise his line a paper called the *Kennesaw Route Gazette*. Now he offers tickets, which with the paper for one year, cost 25 cents each, which ticket entitles the holder to a chance in a drawing for a round-trip ticket to the Philadelphia Centennial, which is to be held on the 1st of June next.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Atlantic, Mississippi & Ohio.—At the adjourned annual meeting in Petersburg, Va., Feb. 16, the following directors were chosen to fill vacancies in the board: Dr. J. H. Claiborne, Petersburg, Va.; Col. Thomas S. Bocock, Lynchburg, Va.; Col. H. E. Warren, Farmville, Va.

The complete organization of the company is now as follows: President, Wm. Mahone; Directors, R. C. Taylor, J. B. Whitehead, J. A. Johnson, J. H. Claiborne, Thos. S. Bocock, C. W. Statham, Wm. Watts, J. A. Walker, A. Fulkerson, H. E. Warren; Superintendent of Transportation, H. Fink; Superintendent of Road Department, George Hoffman; Secretary, N. M. Osborne; Auditor, E. E. Portlock; Treasurer, James E. Cuthbert; Cashier, M. C. Jameson; Storekeeper, J. F. Minetree.

Indianapolis & St. Louis.—At the annual meeting in Indianapolis, Ind., last week, the following directors were chosen: C. C. Gale, Indianapolis; H. B. Hurlburt, J. H. Devereux, Cleveland; Thomas D. Messler, J. N. McCullough, Pittsburgh; Thomas A. Scott, Philadelphia. The board elected H. B. Hurlburt President and Edward King Secretary and Treasurer.

Seale & Wata Walla.—The new board of directors has elected A. A. Denny President; H. L. Yealer, Vice-President; Roswell Scott, Secretary; B. F. Briggs, Treasurer.

Keokuk, Galesburg & Chicago.—The officers of this newly organized company are as follows: President, C. H. Matthews, Galesburg, Ill.; Vice-President, W. S. Gale, Galesburg, Ill.; Secretary, A. Kitchell, Galesburg, Ill.; General Manager, M. H. Chamberlin.

Southwestern, of Georgia.—At the annual meeting in Macon, Ga., Feb. 10, Wm. S. Holt was chosen President, with the following Directors: Wm. M. Wadley, A. R. Lawton, John C. Jones, John L. Mustain, Virgil Powers, John S. Baxter, Thomas B. Gresham. The two last named are new directors.

Dubuque Southwestern.—At the annual meeting in Dubuque, Ia., Feb. 15, the following directors were chosen: M. K. Jesup, D. Willis James, John Cramer, E. R. Goodnow, J. P. Farley.

Memphis & International.—The first board of directors of this new Arkansas company is as follows: P. A. Hadley, James Torrance, John D. Adams, H. M. Cooper, F. S. Davis.

Dubuque & Sioux City.—At the annual meeting in Dubuque, Ia., Feb. 15, the following directors were chosen to serve two years: M. K. Jesup, D. Willis James, J. F. Slater, Theodore Roosevelt, Mason Thompson.

Boston & Haverhill.—At a meeting held in Boston, Feb. 12, this company was organized by the election of the following directors: James H. Carlton, Haverhill, Mass.; George Cogwell, Bradford, Mass.; Charles Purdy, Boxford, Mass.; Wm. J. Dale, Jr., North Andover, Mass.; John L. Smith, Andover, Mass.; Henry Blanchard, Wilmington, Mass.; Charles P. Howard, North Reading, Mass.; Lucius Beebe, Wakefield, Mass.; John Perkins, Lynnfield, Mass.; G. W. Phillips, Saugus, Mass.; Joseph Nichols, Everett, Mass.; Ensign Kimball, Revere, Mass.

Pittsburgh & Castle Shannon.—At the annual meeting in Pittsburgh, Pa., Feb. 15, the following directors were chosen: M. D. Hays, James Kerr, D. D. Cunningham, T. T. Plunkett, Josiah Beamer, H. M. Rolfe, John John, Thomas N. Miller, J. H. Ortman, James M. Bailey, James McQuiston. The board elected M. D. Hays President.

Philadelphia & Erie.—The new board has re-elected Robert Thompson President and Robert P. Little Secretary.

Consolidation Coal Co.—At the annual meeting in New York, Feb. 16, Allan Campbell was re-elected President, with the following directors: Wm. H. Neilson, Wm. M. Ewart, Walton W. Evans, James M. Hartshorn, John V. L. Pruyn, Robert Garret, Wm. F. Burns, Henry Meigs, Wm. B. Hoffman, John Riley. An opposition ticket, with Frederick G. Foster as President, was strongly but unsuccessfully advocated. The company owns the Cumberland & Pennsylvania Railroad.

New York & Oswego Midland.—Mr. John F. Mackey, late Superintendent Northern Division, has been appointed General Superintendent in place of H. M. Flint, deceased. C. W. Lamphar, Superintendent of Bridges and Buildings, was appointed also Superintendent of the Northern Division, in place of Mr. Mackey.

Michigan Central.—The Detroit Free Press is informed that it is finally settled that Mr. H. D. Ledyard, now Assistant General Superintendent, will be appointed General Superintendent in place of Mr. W. B. Strong, who leaves the road to take the same position on the Chicago, Burlington & Quincy.

Marietta & Cincinnati.—At the annual meeting in Cincinnati, Feb. 17, the following directors were chosen: W. W. Scarborough, James D. Lehmer, R. M. Bishop, George Hoadly, Cincinnati; W. T. McClintock, Wm. Waddle, Chillicothe, O.; W. B. Loomis, Marietta, O.; J. N. Camden, Parkersburg, W. Va.; John King, Jr., Thomas Whitridge, Robert Garrett, J. Donnell Smith, Wm. F. Burns, Baltimore. The board re-elected John King, Jr., President; W. T. McClintock, Treasurer; Charles F. Low, Secretary and Auditor; W. E. Jones, Cashier and Registrar.

PERSONAL.

—Mr. Lewis Steward, of Plano, Ill., President of the Chicago, Millington & Western Company, has been nominated as a candidate for Governor of Illinois by an Independent Party convention, including the Granger element.

—Gen. Wm. Mahone, President of the Atlantic, Mississippi & Ohio Company, returned from Europe last week and presided

at the stockholders' meeting in Petersburg. He has been engaged in negotiating a settlement with the bondholders.

—Mr. George A. McCormick has resigned his position as Chief Clerk in the office of the Superintendent of Motive Power, Pennsylvania Railroad, and will engage in private business.

—Major Alexander Rice, who died in Portsmouth, N. H., Feb. 12, at the age of 76, had been ticket agent in that town for the Eastern Railroad 30 years, a very unusual term of service.

—Mr. George Denison, of New York, a prominent and active director of the Missouri, Kansas & Texas Company for several years, and a large owner of its stock, died suddenly in Washington, Feb. 15.

—Mr. John F. Tracy, President of the Chicago, Rock Island & Pacific Company, left New York Feb. 22 for Florida, to be absent four or five weeks. The journey is for the benefit of his health.

—Mr. A. D. Briggs, of Springfield, one of the Massachusetts Railroad Commissioners, was before his appointment and is still a member of a well known firm of bridge builders. He has certainly never made a secret of his business, but the Legislature has lately ordered an investigation into the matter of his taking contracts with railroad companies while a member of the board. Mr. Briggs requests that the fullest possible investigation be made into his official action; he says that the question of his reappointment to his position while remaining a member of the bridge-building firm was before the Governor and Attorney General of the Commonwealth, both of whom decided that there was no objection. It is but fair to say that Mr. Briggs' reputation stands very high, and that not the slightest suspicion has ever attached to his action as Commissioner.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods have been reported as follows:

Year ending Sept. 30:	1874-75.	1873-74.	Inc. or Dec.	P. c.
Housatonic.....	\$852,070	\$694,580	Dec.	12,510
Expenses.....	459,557	464,584	Dec.	5,047
Net earnings.....	\$392,513	\$229,996	Dec.	\$7,463
Earnings per mile.....	5,413	5,513	Dec.	100
Per cent. of expenses.....	67.42	66.93	Inc.	0.49
Mississippi & Tenn.....	\$455,911	\$500,732	Dec.	\$44,821
Expenses.....	244,578	276,096	Dec.	31,518
Net earnings.....	\$211,333	\$224,636	Dec.	\$13,303
Earnings per mile.....	5,007	5,007	Dec.	448
Per cent. of expenses.....	53.65	55.14	Dec.	1.49
Year ending Nov. 30:	1874-75.	1873-74.	Inc. or Dec.	P. c.
Portland & Ogdenburg.....	\$226,150	\$172,206	Inc.	\$53,944
Expenses.....	122,103	112,544	Inc.	9,559
Net earnings.....	\$104,047	\$59,662	Inc.	\$44,385
Earnings per mile.....	2,661	2,296	Inc.	365
Per cent. of expenses.....	53.98	55.36	Dec.	11.38
Year ending Dec. 31:	1875.	1874.		
Flint & Pere Marquette.....	\$1,054,102	\$1,063,986	Dec.	\$9,884
Marietta & Cincinnati.....	\$1,662,015	\$2,094,511	Dec.	\$432,496
Expenses.....	1,290,590	1,571,360	Dec.	280,770
Net earnings.....	\$373,512	\$522,626	Dec.	\$151,726
Earnings per mile.....	5,293	7,273	Dec.	1,980
Per cent. of expenses.....	77.85	75.36	Inc.	2.39
St. Paul & Sioux City.....	\$600,014	\$455,190	Inc.	\$14,824
Expenses.....	384,070	395,318	Dec.	9,248
Net earnings.....	\$215,944	\$159,872	Inc.	\$56,072
Earnings per mile.....	4,590	4,469	Inc.	121
Per cent. of expenses.....	68.60	72.10	Dec.	3.50
St. Paul, Stillwater & Taylor's Falls.....	\$74,280			
Expenses.....	45,892			
Net earnings.....	\$28,388			
Earnings per mile.....	3,095			
Per cent. of expenses.....	61.60			
Month of December:				
Denver & Rio Grande.....	\$36,802	\$29,993	Inc.	\$6,809
Expenses.....	10,711	16,004	Inc.	707
Net earnings.....	\$26,091	\$13,989	Inc.	\$12,102
Per cent. of expenses.....	45.41	53.35	Dec.	7.94
Month of January:	1876.	1875.		
Nashville, Chattanooga & St. Louis.....	\$173,385	\$149,180	Inc.	\$24,205
Expenses.....	100,035	115,954	Dec.	15,869
Net earnings.....	\$73,350	\$33,226	Inc.	\$40,124
Per cent. of expenses.....	57.72	77.72	Dec.	20.00
First week in February:				
Denver & Rio Grande.....	\$7,346	\$6,000	Inc.	\$1,346
Michigan Central.....	123,442	115,656	Inc.	7,786
St. Louis, Iron Mt. & Southern.....	62,600	80,954	Dec.	18,354
Second week in February:				
Chicago, Milwaukee & St. Paul.....	\$125,000	\$74,600	Inc.	\$50,400
Missouri, Kansas & Texas.....	\$60,348	\$48,319	Inc.	\$12,029
Week ending Jan. 28:				
Great Western.....	\$15,493	\$16,408	Dec.	\$915
Week ending Jan. 29:				
Grand Trunk.....	\$27,000	\$25,600	Inc.	\$1,400

Grain Movement.

The Produce Exchange Weekly says that the differences between the freight rate to New York and those to Philadelphia and Baltimore, coupled with the drawback of three cents per 100 lbs. allowed on grain exported from the two latter places, but not on New York exports, tend to divert the export trade from New York. It gives the differences in the rate incorrectly—\$1 per ton to Philadelphia and \$2 to Baltimore, or 5 and 10 cents per 100 lbs., respectively—the actual differences being 4 cents to Philadelphia and 6 cents to Baltimore, or, with the drawback, 7 and 9 cents respectively, on exported grain, amounting on corn, which is the only large Philadelphia and Baltimore export, to 3.92 cents per bushel to Philadelphia and 5.14 cents to Baltimore. The receipts and exports at these ports for the six weeks from Jan. 1 to Feb. 12 were, flour in barrels and grain in bushels:

	Flour.	Wheat.	Corn.
New York.....	480,879	1,136,487	1,529,470
Philadelphia.....	301,470	312,800	1,275,197
Baltimore.....	88,427	147,425	3,185,800
Total.....	740,476	1,596,682	6,489,870
Exports:			
New York.....	279,743	1,874,191	1,639,047
Philadelphia.....	28,716	207,275	1,275,197
Baltimore.....	60,478	62,735	2,562,946
Total.....	369,937	2,144,201	5,480,190

Here Baltimore appears as having received 12 per cent. of the flour, 9½ per cent. of the wheat, and 48 per cent. of the corn, while its exports were 16½ per cent. of the flour, 3 per cent. of the wheat and 47 per cent. of the corn. Both Baltimore and Philadelphia have received more corn than New York.

Ocean Freight.

For this week cargoes have been contracted for as follows:

New York to Liverpool, by sail, wheat 7½d. per bushel; compressed cotton, 9-32d. per pound; lard, 45s. per ton. New York to Bristol, by steam, flour, 3s. to 3s. 3d. per barrel; grain, 8d. per bushel; butter, 45s. per ton. Philadelphia for Cork and orders, by sail, grain, 10½d. per bushel. Baltimore to the Baltic, refined petroleum, 5s. 6d. per barrel.

Railroad Traffic.

The Utah Central and Southern roads report freight traffic as follows for January:

	Tons.
Utah Central.....	11,383
Utah Southern.....	5,866

The leading item on the Southern was 1,756 tons ore and bullion; on the Central, 7,069 tons of coal and coke.

For the year 1875, the Tuckerton Railroad carried 35,676 passengers and 6,477 tons of freight.

The total freight tonnage of the Flint & Pere Marquette road for 1875 was 346,132 tons, a decrease of 0.4 per cent. from 1874. Among the principal freights were 55,998,900 feet of lumber, 220,100,000 shingles, and 103,323 barrels of salt. Up to the month of December the tonnage was an increase over the previous year, but the absence of snow in December and the failure of the usual stock of logs moved by the railroad reduced the total for the year a little below that of 1874.

Freight Rates from Chicago Southward.

The following tariff went into effect on the Illinois Central Feb. 16:

	First class.	Second class.	Third class.	Fourth class.	Fifth class.	Grain.
Chicago to—						
Paducah, Columbus, Ky., Hickman, Memphis.....	\$0.83	\$0.68	\$0.53	\$0.38	\$0.35	\$0.38
Vicksburg and New Orleans.....	1.25	1.00	0.75	0.50	0.45	0.50
Mobile.....	1.18	0.95	0.73	0.50	0.50	0.50

Special rates on full car-loads are as follows:

	Packed Bulk	Beef and	Class A	Class B	Hay and
	meats Flour	pork	pr. car.	pr. car.	lumber
	per 100.	pr. bl.	pr. bl.	pr. car.	per car.
Paducah, Co-					
lumbus, Hickman, Memphis.....	\$0.35	\$0.38	\$0.70	\$1.05	\$75.00
Vicksburg, New Orleans.....	0.45	0.51	0.90	1.40	125.00
Mobile.....	0.50	0.55	1.00	1.40	120.00

Apples, potatoes, cabbages and onions in car-loads the same rates as grain.

Coal Movement.

It is stated that the anthracite combination has recently brought considerable pressure to bear upon the Pennsylvania Railroad Company to induce it to join the combination, and has been successful so far as to secure a promise from it to suspend shipments for a month at the same time with the combined companies. The Pennsylvania now controls considerable bodies of coal lands in the Shamokin and Lykens Valley regions. Coal production for the week ending Feb. 12 is reported as follows:

	1876.	1875.	Inc. or Dec.	P. c.
Anthracite.....	94,074	146,178	Dec.	61,804
Semi-bituminous, Broad Top and Clearfield.....	11,471			
Cumberland.....	18,578			
Bituminous, Barclay.....	4,163			
Western Pa.....	9,993			
Coke, Western Pa.....	4,734			

A meeting of the anthracite combination was held in New York, Feb. 18 to arrange matters for the current year. A number of points of detail were settled, and monthly settlements provided for. The scale of prices agreed on is about 5 per cent. below last year's. It was agreed that only shipments to competitive points should be under control of the combination, each company to have full management of its local trade. The quantity to be shipped to competitive points was fixed at 8,500,000 tons, the monthly and yearly allotments to be increased or decreased, however, as the conditions of the trade may require.

During January the Atlantic, Mississippi & Ohio Company delivered at Norfolk 32,132 bales of cotton, of which 9,959 bales were consigned to Norfolk, and 22,173 bales to Northern and Eastern ports.

THE SCRAP HEAP.

Delays of Freight Trains in France.

In one of a course of lectures delivered at the School of Bridges and Highways at Paris, in 1867, by F. Jacquin, the Superintendent of the Eastern Railroad of France, he gave the following as examples of customary and necessary delays of freight trains at way stations:

Trains from Strasbourg to Paris.—Running speed, 9.3 to 18.6 miles per hour, according to the grades; leaves Strasbourg at 1 h. 20 m. in the morning; arrives at Paris at 6 h. 35 m. in the evening of the next day; time of trip, 41 h. 15 m. The effective speed but 7½ miles an hour, but the train stops 1 h. 15 m. at Lunéville, to let two passenger trains pass; 3 h. 55 m. at Nancy, to let seven passenger trains pass; 50 m. at Frouard, to let one cattle train pass; 1 h. 50 m. at Toul, to let three passenger and two cattle trains pass; 45 m. at Chalons, to let one passenger train pass; 1 h. 5 m. at Epervier, to let three passenger trains pass; 55 m. at Meaux, to let one passenger train pass; 1 h. at Lagny, to let two passenger trains pass.

"The total of stops at stations amounts to 12 h. 47 m., that is, to one-third of the time of the trip. These delays are necessitated by the presence of 22 trains, which the freight train must let pass ahead of it."

Trains from Paris to Nancy.—Running speed, 9.3 to 18.6 miles per hour, according to the grade; time of trip, 27 h. 3 m.; amount of delays at stations, 5 h. 18 m.; effective speed, 8 miles an hour.

"On all the railroads the same facts and the same restrictions would be found. Perhaps you will find excessive the time assigned for a side-tracking made to let a single train pass, and it may not be understood why a few minutes are not sufficient for this operation. It is proper to remark beforehand that the switching on double-track lines is always effected by backing. The engine thus must pass the switch the whole length of the train before beginning to switch off, which is an operation that must be slowly executed. In order to side-track directly, it would be necessary to enter the sidings at the points of the switches, and we have seen that this is forbidden on double-track lines."

Railroad Manufactures.

The New Castle (Pa.) Foundry and Manufacturing Co. recently furnished the engines, rolls and entire plant for a rolling mill at Terre Haute, Ind., and are now building the blast engines for Lemont Furnace near Uniontown, Pa.

All the rolling mills at New Castle, Pa., are now running, with fair prospects for keeping at work.

Mr. B. W. Healy, formerly of the Rhode Island Locomotive Works, is trying to make arrangements to start a new locomotive shop in Worcester, Mass. He wishes to raise \$200,000 in that city for the purpose of building a shop to employ about 400 men.

Seyfert, McManus & Co., at Reading, Pa., are running their tube mill with about 50 men and the steam force with about 30. The blast furnaces are not running at present.

The Novelty Iron Works at Cleveland, O., are building the roofs for the new shops of the Cleveland, Columbus, Cincinnati & Indianapolis road at Brightwood, near Indianapolis. They also have orders for several bridges.

The Vulcan rail mill at St. Louis is at work re-rolling old iron rails.

The Hunnewell Furnace at Greensburg, Ky., has been in blast about a month and is making an average of 17½ tons of iron per day.

The Monocacy Furnace, at Monocacy, Berks County, Pa., is in blast and running about 200 tons of iron per week.

Eight new anthracite-burning engines of class C have been ordered to be built at the Altoona shops of the Pennsylvania Railroad.

The Kansas City Rolling Mills are at work on rails for the extension of the St. Louis, Keokuk & Northwestern Railroad.

The Portland Company at Portland, Me., has little or no locomotive work on hand but is running its shops on general work and some marine engine contracts.

The well-known firm of Morris, Tasker & Co., manufacturers of gas and steam-pipes, boiler-tubes, etc., at Philadelphia and New Castle, Del., was dissolved Feb. 3, Mr. Thomas T. Tasker, Jr., retiring. A limited partnership association, to be known as Morris, Tasker & Co., limited, succeeds the old firm, and is composed of Messrs. Stephen P. M. Tasker, Charles Wheeler and T. Wistar Brown. That part of the business of the old firm which was carried on in Delaware will be conducted by the Delaware Iron Company, under a charter from the State of Delaware, the stock of that corporation being owned by Morris, Tasker & Co., limited.

The Missouri Valley Bridge Works at Leavenworth, Kan., have a number of orders on hand, mainly for highway bridges.

The Detroit Bridge & Iron Works have been awarded a contract for an iron bridge over the Wabash River at Logansport, Ind., at \$46 per lineal foot.

The Watson Manufacturing Company, at Paterson, N. J., are building a bridge 300 feet long, which is to cross the Rio Pomba in Brazil. It is in three spans and will cost \$10,500.

Excursion of Track Supervisors.

The Wilmington (Del.) Gazette of recent date says: "Thursday, about 20 Supervisors or section bosses of the Philadelphia, Wilmington & Baltimore Railroad, were given an excursion trip to Jersey City, in a special car, by the company. At Philadelphia they were provided with dinner, after which their car was attached to a train on the New York Division of the Pennsylvania Railroad to Jersey City. Here they took supper and returned to Wilmington the same night. Chief Supervisor E. M. Fuller and Chief Engineer S. T. Fuller accompanied the party. The excursion was given to afford the supervisors an opportunity of observing how the tracks of the Pennsylvania Railroad line to New York are kept in good running order. The trip was greatly enjoyed by all the excursionists."

OLD AND NEW ROADS.

Meadville & Lake Shore.

There is talk of a narrow-gauge railroad from Meadville, Pa., north by west through the Cussewago Valley to Crossingsville, thence through Pleasant Valley and Wellsburg to the old canal bed at Cranesville, and following that through Girard Village to the Lake Shore road at Miles Grove. The distance is about 30 miles, through a good country, and it is thought that the road would command a large local business.

Illinois & St. Louis.

It is said that this company is making arrangements to extend its road, which now extends from East St. Louis to Belleville. The extension is to be from Belleville southeast, crossing the Illinois Central at Tamaras, to Benton in Franklin County, a distance of about 70 miles. From Benton the road is to be extended south to the Ohio River, probably at a point opposite Paducah.

Meetings.

The following companies will hold their annual meetings at the times and places given:

St. Louis, Iron Mountain & Southern, at the office in St. Louis, March 7.

Kansas City, St. Joseph & Council Bluffs, in St. Joseph, Mo., March 7.

Pennsylvania, at Music Fund Hall, Locust above Eighth street, Philadelphia, March 14, at 10 a. m.

Cleveland, Columbus, Cincinnati & Indianapolis, at the office in Cleveland, O., March 1.

Cleveland, Tuscarawas Valley & Wheeling, at the office in Cleveland, O., March 8.

Dividends.

Dividends have been declared by the following companies:

Boston, Revere Beach & Lynn, 2 per cent., quarterly, payable Feb. 15.

Summit Branch, 3 per cent., semi-annual, payable Feb. 15.

Denver & Rio Grande.

A dispatch from Colorado Springs, dated Feb. 22, says that on that day the track of the Trinidad Extension reached the Cucharas, Col., 50 miles southward from Pueblo and 170 miles from Denver. Work is to be pushed rapidly on the 40 miles remaining to reach Trinidad.

Syracuse & Chenango.

Judge George T. Constable, as trustee under the first mortgage, has taken possession of this road and has begun suit to foreclose the mortgage. The road is 44 miles long, from Syracuse, N. Y., east by south to Earlville, and by the latest published statement there were \$1,142,000 bonds outstanding. It was formerly known as the Syracuse & Chenango Valley, and was sold under proceedings in bankruptcy, subject to the first mortgage, in 1873, and was then bought by the present company.

Macon & Brunswick.

Jan. 25 was the date up to which the Governor of Georgia was prepared to receive proposals for the sale or lease of this road. At least one and probably more bids were received, but the result has not yet been announced. One bid was submitted by a party represented by Mr. George H. Hazlehurst, President of the old company, which contemplated a purchase of the road by payments in yearly installments.

Virginia & North Carolina.

A bill chartering this company has passed the Virginia Legislature and has become a law. It authorizes the construction of a railroad about 30 miles long, from the Atlantic, Mississippi & Ohio at Max Meadows, Va., southward to the North Carolina line in Grayson County. It is in the line of the projected extension of the Atlantic, Tennessee & Ohio road.

Alpena & Southwestern.

A company by this name has filed its articles of incorporation in Michigan. The capital stock is to be \$1,050,000 and the road to be built is from Alpena, Mich., southward, running parallel and near to Lake Huron to the Jackson, Lansing & Saginaw, probably at Standish. It would be about 85 miles long, and would pass through a lumber country with but few permanent settlements.

Brotherhood of Locomotive Engineers.

In view of the recent reductions in pay made on most of the Massachusetts roads, Division No. 61, located in Boston, recently adopted the following:

Whereas, Railroad companies have considered it necessary to make reductions in salaries and wages of employees on ac-

count of continued depression in business, and we, the engineers employed on the several railroads running into and out of the city of Boston, feeling a disposition to be liberal toward our employers and bear our share of the burden, have submitted to one reduction of our pay within the last year; and

Whereas, Our labor and responsibilities have not and cannot be reduced, but on the contrary are constantly increasing from year to year; and

Whereas, Our compensation has never been in proportion to our responsibilities and the risks we are obliged to assume; therefore, be it

Resolved, That we, the engineers representing the several railroads running into and out of the city of Boston, are unanimously and unalterably opposed to any further reduction of our pay, and will use our united efforts to prevent the same.

Butler & Shenango.

Meetings are being held in favor of the construction of a narrow-gauge road from Butler, Pa., northward to a connection with the Shenango & Allegheny road at Hilliard's Mills, a distance of 23 miles. Committees have been appointed to canvass for subscriptions, and much of the right of way is promised free. The road would furnish a northern outlet to the new Butler oil district.

Cazenovia, Canastota & De Ruyter.

Arrangements are being made to begin work on the extension from Cazenovia, N. Y., to De Ruyter. It is thought that it will be completed during the coming summer.

Geneva, Hornellville & Pine Creek.

A mortgage has been executed and put on record by this company to John N. Whiting, as trustee, to secure an issue of \$3,350,000 in 6 per cent. bonds to be dated Feb. 1, 1876, and to have 33 years to run. The mortgage covers all the property to be acquired by the company, and specifies the line of the projected road as being from Geneva, N. Y., to the mouth of the West Branch of Pine Creek, in Potter County, Pa. As further security another mortgage has been executed on 12,921 acres of coal and timber land in Tioga and Potter counties, Pa., which the owners convey to the company.

Pekin, Lincoln & Decatur.

In the United States Circuit Court at Springfield, Ill., Feb. 15, a decree of foreclosure of the first mortgage was entered against this company, on suit of the trustees. The road is 68 miles long, from Decatur, Ill., northwest to Pekin, and is worked by the Toledo, Wabash & Western.

Northern Pacific.

A fire in the round-house at Rice's Point, Duluth, last week, destroyed one wing of the building and badly damaged four locomotives. The loss is estimated at \$25,000.

Orders have been given to reopen the Dakota Division, from Fargo to Bismarck, for travel. If it is not obstructed by the late storms more than is supposed, trains will begin running to Bismarck, March 1, and regular trips will be kept up thereafter.

It is said that the directors have decided to begin work as soon as possible on the extension from the Missouri River at Bismarck westward to the Yellowstone. The line was located and staked out three years ago.

Central Vermont.

The St. Albans (Vt.) Messenger says: "Beginning with the present month the pay-car on the Central Vermont railroad will be discontinued, and, in future, checks from the pay-rolls, accompanied by abstracts, will be forwarded to the various and proper agents by express. All abstracts must be returned to the paymaster's office immediately on obtaining the requisite signatures, and unclaimed pay-checks, at the expiration of thirty days from the date of their receipt."

Iowa Railroad Law.

The new railroad law now pending in the Iowa Senate repeals most of the existing law and provides for five classes of roads, class A, those which have net earnings of \$3,000 per mile or over; class B, net earnings over \$2,000 and less than \$3,000 per mile; class C, net earnings from \$1,000 to \$2,000 per mile; class D, net earnings less than \$1,000 per mile; class E, those whose expenses exceed their earnings. The basis of classification is to be the earnings for the present year. In estimating the rates allowed branch roads are to be considered as separate lines. A considerable increase in local and short distance rates is allowed over the present law, and passenger fares are fixed at from 2½ to 5 cents per mile according to class of the roads. Consolidation of companies and pooling of earnings are prohibited.

There is much feeling, apparently, in the State on the question of the repeal of the law, and a very lively discussion is going on between its advocates and opponents.

New York Railroad Commission.

A bill has been introduced in the New York Senate providing for a board of three railroad commissioners with general supervisory and advisory powers over the railroads of the State. The bill is very similar in its provisions to the law under which the Massachusetts Commission acts.

Hudson Tunnel Railroad.

Two amendments to the general law, both prepared in the interest of this company, have been introduced in the New Jersey Legislature. One provides that the provisions of the law shall extend to companies organized, as this is, to provide means of passage under a navigable stream; the other that a company may, if it is enjoined by legal process from working on its road, add the period during which such injunction was in force to the time allowed by the law for the completion of the road.

Gilman, Clinton & Springfield.

A conflict of jurisdiction has arisen between the Federal and State courts as to the suits concerning this road. Judge Tipton, of the Illinois Circuit Court, holds that the transfer of the case to the United States Circuit Court was not legally and properly made and has ordered the arrest for contempt of parties concerned in the transfer. On the other hand the United States Circuit Court holds that the transfer was properly made and has made an order directing the marshal of the district to give formal notice to all agents and employees that the road is in custody of the Court. The order further enjoins all such agents or employees from surrendering any property in their hands without orders from the Court and enjoins all persons and public officers from attempting to take possession of the property and from interfering in any way with the trustees, Thomas A. Scott and Hugh J. Jewett, or their agent, Charles S. Seyton, who is now in possession of the road.

The Maryland Legislature and Railroads.

The railroad committees of both houses of the Maryland Legislature are busy investigating certain matters referred to them by that body. The House Committee has been examining into charges made against the Philadelphia, Wilmington & Baltimore and other companies of discriminating in favor of Philadelphia and against Baltimore. A number of witnesses have been examined, including Vice-President Cassatt, of the Pennsylvania and Northern Central companies.

The Senate committee has had in hand a bill to regulate and reduce the rates now charged on coal over the Cumberland & Pennsylvania Railroad. The coal companies of the Cumberland region complain that they are obliged to send their entire product over this road to reach any of the lines over which it passes to market, and that they are charged exorbitant rates,

They also complain that the Consolidation Coal Company, which owns the road, derives enormous profits from it, which it uses to make up losses on its coal mining business; that it desires to and in fact does, through its ownership of the road, control the trade and keep down prices, to the great detriment of the other companies. They wish to have its income from the road restricted so as to relieve them from some of their present burdens and to put the Consolidation Company on a fair and even footing with the others as far as the coal trade is concerned.

In addition to these matters an investigation is in progress into the management of the Chesapeake & Ohio Canal.

Pennsylvania Coal Company.

A rumor is current that this company has been having surveys made for a line of its own to some point on the Hudson River or New York Bay. The bulk of its eastward bound coal traffic now passes over the Erie. One of the lines reported to have been run is from Port Jervis, N. Y., southeastward through Sussex and Morris counties in New Jersey.

Indianapolis, Bloomington & Western.

Under orders of the Court in the suit brought by the Rogers Locomotive Works to recover possession of 28 engines now on the road and wholly or partly unpaid for, the engines were sold at public auction in Indianapolis, Feb. 12, 14, 15 and 16. The whole amount realized by the sale was \$99,600, one being bought for \$4,000 by the Cincinnati, Rockport & Southwestern Company, and the rest, or nearly all of them, being bid in for the Rogers Company. Twelve of the engines are in very bad condition and will be sent to Paterson to be rebuilt, but the rest are in fair order, and Receiver Wright is negotiating for a lease of them for the use of the road, and they will probably be rented to him.

Cincinnati, Hamilton & Dayton.

During the year 1875 the work of bringing the Indianapolis Division into good condition was continued. Three new depots, three new water tanks of 30,000 gallons capacity each, and seven miles of new sidings were built. There was used in repairs of track 31 miles of new iron, and 60,000 ties and \$50,000 were expended in rebuilding and repairing bridges. A steam shovel was kept at work several months widening the cut at Connersville, and 15 miles of the road were ballasted.

Northern Central.

The new building in Baltimore for the general offices has been completed and was occupied last week. It is thus described by the Baltimore Gazette: "This building, located on the corner of Calvert and Center streets, is of substantial appearance, and without any special pretensions to architectural beauty, is quite an ornament to the city. It is built of pressed brick, laid in black mortar and is four stories in height with a basement. It faces on Calvert street with a front of 50 feet and a depth of 80 feet on Center street, with an entrance on both streets. The only attempts at any ornamentation are the trimmings of Ohio stone and rows of alternate white and black brick, laid with their corners outward between the stories. On each side of the principal entrance on Calvert street stand pillars of this Ohio stone, supporting an arch of the same material, which bears on its keystone the monogram of the company. The entrance doors are made of massive walnut. The building is heated with steam. On each floor is a fireproof vault to contain the valuables of the company. On the first floor are the offices of the Treasurer, the General Passenger and General Freight Agents. On the second are the offices of the directors, the Secretary, the Purchasing Agent and the General Agent. The third and fourth floors are entirely occupied by the Auditor's and general freight departments. The contractors for the building were S. H. and J. F. Adams."

The company has added to the real estate which it owns adjoining the Calvert station in Baltimore a plot 130 by 110 feet lying between Buren and Madison streets and Jones's Falls. The price paid was \$30,000.

Mackinaw & Marquette.

The parties who now offer to build this road are Capt. E. L. Crow, of Fruitport, Mich., A. J. Cooper, of Chicago, Wm. Webster, of Boston, and others, who are said to control abundant capital. A final settlement of the matter was probably had Feb. 23, when an adjourned meeting of the Board of Control was to be held. The new company will not be fully organized until it is decided whether it is to have the contract.

The law authorizes the Board of Control to appropriate not to exceed 10,240 acres of the State swamp lands per mile to any company which will build a railroad from the Straits of Mackinaw to Marquette Harbor. In case of competition the contract is to be awarded to the party who will build the road for the least land.

Texas & Pacific.

It is stated that Vice-President Bond has promised to have trains running to Fort Worth by June 1. The iron for the unfinished section of the Transcontinental Division, from Brookton to Texarkana, 96 miles, has been secured, the company agreeing to set aside all the net earnings of the division for payment for the same, until the entire debt is liquidated. Iron for the completion of the main line to Fort Worth has been, it is said, secured on the same terms.

Portsmouth & Olinion.

It is proposed to build a narrow-gauge road some 10 miles long from Portsmouth, O., to the coal beds near Clinton Furnace.

New Orleans, Mobile & Texas.

The bondholders of the Western Division who have agreed to the plan proposed by F. M. Ames, trustee, met in New York, Feb. 19, and resolved to organize a new company, to be known as the New Orleans & Texas. An adjournment was had until Feb. 25, when the organization will be completed.

New Jersey Southern.

The bondholders' committee gives notice that unless the agreement now open for signature at the office of Lord, Day & Lord, No. 120 Broadway, New York, receives the assent of a sufficient number of first-mortgage bondholders by March 1, 1876, all privileges resulting from the same will be forfeited. The agreement provides for the reorganization of the company and its consolidation with its allied and leased lines in New Jersey and Delaware.

The Central Vermont and Rutland Settlement.

For some time past, in fact since Mr. Bradley Barlow became a member of the Central Vermont board, negotiations have been pending for a settlement of the matters at issue between that company and the Rutland Company as to the lease of the latter road. The matter was finally settled, at least so far as the directors had authority to do so, at a meeting held in Boston two weeks ago, and the agreement then concluded will be submitted to the stockholders of both companies at meetings called for that purpose at Brattleboro, Vt., Feb. 25. The agreement provides first for a compromise on the back rental due, the Rutland agreeing to receive a sum variously stated but probably not far from \$200,000, the yearly rental to be computed at \$250,000 from Feb. 1, 1875. The Central agrees to abandon all charges of fraud in the making of the lease, to release all claims on account of work claimed to have been done on the Addison road, and to release the Rutland from any claims on account of the Vermont Valley lease.

For the future a material alteration in the lease is made. The earnings of the Vermont Central, the Vermont & Canada and the Rutland railroads are to be pooled and divided on a

fixed basis, the Rutland receiving 36½ per cent. of the total. Of this amount the Central Vermont as lessee will retain 75 per cent. to cover working expenses, leaving the Rutland 9 1-16 per cent. of the gross earnings. In order, however, to protect the Rutland against loss by mismanagement or diversion of business, the Central guarantees that its share shall never be less than \$250,000 in any one year. The earnings of the three roads in 1875, a bad year for them as well as so many others, are stated in round figures at \$2,703,000, of which the Rutland's net percentage under the agreement would be \$243,000, or only \$7,000 less than the guaranteed amount. The various law suits pending will, of course, be withdrawn.

As a private agreement, collateral to the above settlement, the Smiths agree to buy the stock of the Central Vermont Company held by Gov. Page, and Messrs. Barlow, Brooks and Edwards at par, and to pay 8 per cent. interest until the money is all paid, the purchase to be made as of Feb. 1, 1875, and interest to count from that date. It is understood, however, that Messrs. Barlow, Edwards and B. B. Smalley will remain directors of the Central Vermont until the whole matter is settled. The Rutland is also guaranteed against an unfavorable issue of the Vermont Valley suit.

One thing may cause a hitch in the matter; the Vermont & Canada Company is not a party to the agreement, and may possibly protest against the unceremonious disposition of its earnings. The contract for the purchase of this road by the Central Vermont, made a year ago, has never been carried out, and some further agreement with it may be necessary. The Central has possession of the road, and has paid no rent for three years past, and may assume that it has the right to contract for the pooling of its earnings, but it is altogether likely that there will be some trouble about it.

Nevada County.

Mr. John F. Kidder, Superintendent of Construction, informs us that the track is now laid 19 miles from the junction with the Central Pacific at Colfax, of which 13½ miles were laid in 1875. The road-bed was all graded and the bridges built in that year. The total length of the road is 22½ miles, from Colfax, Placer County, Cal., through Grass Valley to Nevada City, Nevada County. The gauge is 8 feet and the track is laid with iron weighing 35 pounds per yard. The maximum gradient is 116½ feet to the mile, the minimum radius of curvature 303 feet, being a 19-degree curve. The equipment consists of 2 Baldwin engines with 12 by 16 inch cylinders, 2 baggage, 2 passenger, 15 box and 16 flat cars. The road runs through a fine mining and timber country; Grass Valley has 8,000 and Nevada City 4,000 inhabitants.

Cape Girardeau & State Line.

At a meeting of the directors in Cape Girardeau, Mo., Feb. 9, it was resolved that, whereas the Illinois, Missouri & Texas Railway Company had failed to comply with essential provisions of the contract of Oct. 4, 1872, for the construction of the road, that contract was therefore declared forfeited and the Executive Committee was instructed to take such steps as might seem necessary to secure the rights of this company and insure the speedy completion of the road.

Tuscola, Charleston & Vienne.

The supervisor of the town of Charleston, Ill., recently turned over to this company \$100,000 in subsidy bonds of the town. Work will be immediately resumed on the road, a good part of which was graded in 1873. It is intended to run from Tuscola, Ill., southeast through Charleston to a junction with the Paris & Danville road.

Auction Sales of Railroad Securities.

In New York, Feb. 21, Saginaw Valley & St. Louis 8 per cent. first-mortgage bonds brought 75; Hackensack & New York Extension first-mortgage bonds, 65.

Feb. 23, Belleville & Southern Illinois first-mortgage bonds brought 92½; Pennsylvania Coal Company's stock, 27½.

New York & New England.

A circular has been issued announcing the opening, April 3, of the new passenger line from Boston to Philadelphia, Baltimore and Washington without change of cars. The route will be by New York & New England from Boston to Willimantic; by Hartford, Providence & Fishkill to Hartford; by New York, New Haven & Hartford to Harlem River, whence the steamer Maryland will transfer the trains to the Pennsylvania tracks at Jersey City. A morning and an evening train will be run, carrying on both through passenger cars and Pullman day and sleeping cars. The Maryland was formerly used to transfer trains across the Susquehanna at Havre de Grace before the building of the bridge there, and will carry eight cars at a trip. The transfer will occupy about an hour, giving plenty of time for meals, etc. The company announces that it is ready to make liberal arrangements for special trains from Boston and other New England points. The new arrangements have been made with special reference to travel to the Centennial.

A correspondent writes under date of Feb. 20: "Work is to be begun to-morrow on the raising of the grade of this road across South Bay in Boston. This change is made to avoid a grade crossing at Swett street, a new street recently laid out by the city to connect Roxbury and South Boston. The track is to be raised about fourteen feet above its present grade. The company are to raise the grade and build two bridges; one for Swett street and another on the line of the extension of East Chester Park. The work will be done by J. B. Dacey & Co., of Boston, will be so managed as not to interfere with the running of regular trains and is to be completed early in June next. Messrs. Dacey & Co. also have the contract for building Swett street."

Within the past year the road-bed and rolling stock have been very much improved. Miller platforms have been put on all the cars, and Smith's vacuum brake on all passenger cars and engines.

The engines have also been rebuilt and will now compare favorably with any road out of Boston."

Cost of the Fast Mail Trains.

Mr. George S. Bangs has made a report to the Postmaster-General showing the cost of the fast mail trains as now run. On the line from New York to Chicago by Buffalo the annual payment for the fast mail service is \$145,542, being \$58,876 more than the former service; the additional expense for clerks is \$26,200, making \$171,742. From this must be deducted, however, the cost of lines made unnecessary and discontinued in consequence of the new service, which amounts to \$67,828, leaving as the net increase of cost \$17,245 only. On the line from New York to Pittsburgh, Cincinnati and St. Louis the whole cost for car service is \$92,910 and for increase of clerks, \$47,000. Deducting as before the cost of lines discontinued, the net increase in cost on this line is \$81,462.

The Government fast mail train is made up of four postal cars, and runs daily each day between New York and Chicago, a distance of 960 miles—making 1,940 miles of daily service and 708,100 miles of annual service. This is equivalent to the service of one car (on the old style) of 7,762 miles daily, or 2,833,217 miles annually. Similar facts are true, of course, of the fast trains over the other lines, this service amounting in the aggregate to the equivalent of single car service on 1,712,370 miles in a year. The grand total, therefore, of service (single car) is 4,545,588 miles annually.

James River & Kanawha Canal.

A special meeting of the stockholders was held in Richmond, Va., last week. The committee appointed at the annual meeting made a report setting forth that the canal needed repairs;

that repair work of late had not been well done; that a saving could be made by dispensing with some officers and reducing salaries of others, and that the revenue from water-power could be largely increased.

The meeting then proceeded to consider the question of extending the canal from Buchanan to Clifton Forge. There was a long and heated discussion on a motion in favor of building a railroad instead of extending the canal, which was finally voted down, and resolutions were passed instructing the directors and officers to resist in every possible way the construction of a railroad on the line marked out for the canal.

A bill chartering the Buchanan & Clifton Forge Railroad Company is now before the Virginia Legislature.

A compromise has been proposed as to the extension. The proposition is to extend the canal 18 miles to Craig's Creek and make the connection from that point to the Chesapeake & Ohio at Clifton Forge by a railroad, to be owned by the Company. To provide the funds the canal company is to issue \$500,000 in 8 per cent. bonds, interest to be guaranteed by Lynchburg and Richmond.

Kent County.

Some months since this company gave up the use of the Townsend Branch, which it had before sub-leased from the Queen Anne's & Kent Company, and began to run its trains from Massey's to the Delaware Railroad over the Smyrna & Delaware Bay road. Its trains were, however, obliged to use some 400 feet of the Queen Anne's & Kent track at Massey's. The latter company recently demanded \$400 rent for such use and threatened to forbid it entirely. Upon examination, however, it was found that a law of Maryland regulates the matter and fixes the rent to be charged, so that the Kent County road could not be prevented from using the track and was only obliged to pay some \$70.

Sussex.

It is said that this company has offered to give the town of Newton, N. J., until May 1 to settle the long standing difficulty as to the Newton town bonds. If the offer is not accepted the shops will be removed to Franklin Furnace, train service reduced and the spur track leading into the town taken up, leaving the only depot some two miles from the business portion of the town.

The wages of all employees have been reduced 10 per cent. and the men in the shops put on two-thirds time.

New Jersey Midland.

The Receivers have concluded the contract heretofore referred to for the transportation of 50,000 tons of iron ore during the present year from Charlotteburg to Marion Junction, where it will be delivered to the Pennsylvania Railroad for transportation to Harrisburg, Pa. The price agreed on to the Midland is \$46,000, being about 2.3 cents per ton per mile, which, it must be remembered, includes the return of the empty cars.

Amsterdam Market for American Bonds.

During the week ending Feb. 3, a large part of the business on the Amsterdam stock exchange was in this company's bonds, which seemed to be daily increasing in favor. West Wisconsin bonds rose from 42 to 50, and it was believed that they were bought for the Chicago & Northwestern. Atchison, Topeka & Santa Fe bonds rose from 58 to 66, and were much in demand. A correspondent writes that the general tone in the market for American securities was much better than for three years past, and many capitalists were investing in them.

Vermont Railroad Taxation.

The last Legislature of Vermont passed a law authorizing towns to tax railroads within their limits. The Vermont & Canada and the Vermont Central bondholders' committee have notified the Central Vermont Company, trustee, that they believe this law to be unconstitutional, and that if any taxes are paid by the trustee, it will be held responsible. An injunction against the payment of the tax has been applied for on behalf of the Vermont & Canada and a preliminary injunction granted.

Jeffersonville & Waynesville.

A line has been surveyed for a narrow-gauge road from Jeffersonville, Fayette County, Ohio, southeast to Waynesville, a distance of 30½ miles. It is estimated that the road can be very cheaply built.

North Pennsylvania.

A general reduction of 10 per cent. in the wages of employees has been ordered. This is the first reduction made since 1873.

White River.

It is said that parties in Boston have offered to build this road from the Vermont Central at Bethel, Vt., west by south up the White River Valley through Rochester, Stockbridge, Sherburne, Pittsfield and Chittenden to Rutland, provided 40 per cent. of the cost can be raised along the line. Rochester and Stockbridge towns have both voted to bond. The length of the line is about 35 miles, and the estimated cost \$1,100,000.

Connecticut & Passumpsic Rivers.

The lease which this company holds of the Southeastern Railway of Canada will expire March 1, and it is said that it will not be renewed. The company holds a claim against the Southeastern for advances made, amounting to nearly \$500,000, and it is said that steps will be taken to enforce payment, the company probably expecting to secure possession of the road in this way.

Boston & Haverhill.

A proposition has been made by a responsible party to build this proposed narrow-gauge road complete, with equipments for \$615,000, and to have it completed by August next, provided he can begin work by March 15. The company was organized at a meeting held in Boston, Feb. 12. The line is to extend from Boston north in a pretty direct line to Haverhill, about 80 miles, with a branch to Lawrence three or four miles long, unless a detour is made so as to bring Lawrence on the main line.

Memphis & International.

A company by this name has filed a certificate of incorporation in Arkansas and proposes to build a road some 300 miles long from the Mississippi opposite Memphis, Tenn., across Arkansas to a connection with the International & Great Northern and the Texas & Pacific.

Indianapolis, Cincinnati & Lafayette.

In order to settle the dispute as to the rental due for the depot grounds occupied in Cincinnati by this road, the company has offered to pay the city \$30,000 in full of all claims for rent up to June 1, 1876, to release the city from all claims the company may have to the square in front of the depot, and to agree to the execution of a new lease with strict provisions, the amount of rent to be paid to be fixed by a board of appraisers. If this proposition is not accepted, the company offers to submit the whole matter to arbitration. The dispute is as to the amount due the city.

Atlantic, Mississippi & Ohio.

The stockholders met pursuant to adjournment in Petersburg, Va., Feb. 8, but adjourned for another week, as President Mahone had not yet arrived from Europe. At the last meeting, Feb. 15, the annual report was presented and approved. It was resolved that the right of stockholders to free passage over the road to and from meetings should be limited by re-

quiring them to show on the return trip a certificate of actual attendance at such meetings. Propositions to require a stock vote on any question on call of 3,000 shares, and to print and distribute copies of Lieut. Maury's report on the advantages of Norfolk as a sea-port, were rejected.

The agreement with the foreign bondholders negotiated by President Mahone was not submitted, as it had not yet been considered by the board of directors.

St. Paul & Pacific.

The Amsterdam committee has received new proposals from the company with regard to the St. Vincent and Brainerd Extension bonds, and announces that though it does not consider the terms proposed admissible, it hopes they will lead to an agreement. This news caused Brainerd Extension bonds to rise from 7 to 8.

North Pacific Coast.

About 700 feet out of 1,600 are finished in the tunnel north of Tomales, Cal. The road-bed beyond the tunnel is being cleared and work on the grading is to be resumed in March.

Delaware, Lackawanna & Western.

In consequence of the suspension of coal mining, a large number of engines have been laid up and work in the repair shops suspended for a month.

It is said that the question of changing all the company's lines from 6 feet to 4 feet 8½ inches gauge was to come up for final decision at the February meeting of the board of directors.

Chicago & Lake Huron.

The contract for 30 miles of the unfinished section between Lansing, Mich., and Flint has been let to Miller & Reed, of Battle Creek, Mich. The section extends from Lansing to the Detroit & Milwaukee crossing at Vernon. The line into and through Lansing is to be changed and the depot will be located at North Lansing. The company will complete the work on the section from Vernon to Flint.

Rochester & State Line.

Mr. J. Condit Smith, of Buffalo, has made a proposition which is as follows:

1. The capital stock to be increased to \$2,500,000; the bonds now held by the city of Rochester and the towns which have bonded in aid of the road to be exchanged for stock at par; the balance of the stock, except that already issued, to be issued to Mr. Smith.

2. All the outstanding bonds to be retired and a new first mortgage for \$12,000 per mile and a second mortgage for \$8,000 per mile to be made, the bonds to be issued to Mr. Smith.

3. In consideration of the stock and bonds, Mr. Smith will complete the road from Rochester to Salamanca within six months from the execution of the contract, will build the necessary round-house, repair shop, station buildings, three turn-tables, seven water-tanks, two track scales and the necessary sidings. The buildings to be located as the board may direct, and to cost not less than \$90,000 in all. He will also equip the road with 12 engines, 8 passenger and 4 mail and baggage cars; 150 box, 350 flat and gondola cars and 20 hand cars.

4. Mr. Smith will also settle the present floating debt on such terms as he may be able to make. He will enter into bonds with approved sureties for the fulfillment of the contract.

At a meeting held Feb. 15 the City Council of Rochester voted to accept the proposition, and the commissioners of the bonded towns also approved it. The contract will be executed as soon as the necessary authority for the exchange of bonds for stock can be obtained from the Legislature.

The road is all graded and bridged from Rochester to Salamanca and 25 miles of track laid, from Rochester to Leroy. It is said that Mr. Smith owns a large body of coal lands in Pennsylvania which the road will be made to serve by an extension to Warren, Pa., from Salamanca. The proposed arrangement will give him a controlling interest.

Syracuse, Geneva & Corning.

A considerable force is soon to be put on the grading near Corning, N. Y. The contractors have begun to get ready the stone for the piers of the bridge over Chemung River, which will be taken from the quarries near Corning.

Missouri, Iowa & Nebraska.

Arrangements are being made to build a branch from Centerville, Ia., north to Albia, to connect there with the Chicago, Burlington & Quincy and the Central of Iowa. The distance is about 30 miles. A company has been organized and the Missouri, Iowa & Nebraska has promised to iron, equip and work the road if the branch company will grade and tie it.

Gulf, Colorado & Santa Fe.

The great storm of last Fall carried away a part of the bridge over Galveston Bay, then nearly completed, and washed away much of the road-bed and track then finished. The damage then done has never been repaired, nor has work been resumed on the road. The reason for this is that a suit has been begun in the Texas Supreme Court to restrain Galveston County from issuing the bonds voted to the road. Pending this suit the company has no money to spend and is unwilling to incur any further debt, and so the work is entirely suspended.

Galveston, Harrisburg & San Antonio.

The town of New Braunfels, Tex., has voted, by a large majority, in favor of a subsidy of \$75,000 in aid of this road.

Eastern.

The Lower House of the Massachusetts Legislature has passed the bill for settling the difficulties of this company. The only amendment made to the creditors' plan was a provision that the management shall revert to the stockholders when the debt has been reduced to \$10,000,000, instead of \$7,000,000, as provided in the original draft of the bill.

Illinois Midland.

Since his appointment Receiver Dole has been engaged in putting the road-bed and track in as good order as possible with the means at his command. He has so far succeeded that the road is said to be in better condition than ever before.

Delaware Shore.

The work of laying track on this road was resumed at Paulsboro, N. J., Feb. 14, a new contract having been let. Work is to be continued as fast as possible in the expectation of completing the road in time for the summer traffic.

Lehigh & Eastern.

At a meeting of the directors in Milford, Pa., Feb. 18, it was stated that \$280,000 had been subscribed along the line between Danville, Pa., and Stroudsburg and \$100,000 between the latter place and Milford. About \$150,000 more is needed to ensure the building of the road. A committee was appointed to canvass for subscriptions and secure the right of way between Milford and Port Jervis.

New Jersey Railroad Taxation.

The bill prepared in committee for the taxation of the railroads of New Jersey provides that all the railroads in the State, excepting only the United New Jersey, which is exempt by its special charter and contract with the State for such general tax, shall pay a State tax of 0½ per cent. on the cost of road and equipment. Every company shall make on or before Jan. 1 of each year a full statement of such cost, to be verified

by oath, which shall be filed in the Comptroller's office, and the tax shall become due Feb. 1. If a company fails to make a return, or makes an imperfect or manifestly untrue one, the Commissioner of Railroad Taxation shall proceed to estimate the cost of the property and assess the tax accordingly. An appeal from the Commissioner's action will be to a Justice of the Supreme Court, whose decision shall be final. In case of failure to pay the tax summary proceedings are provided for.

There has been much discussion over a proposed amendment providing that any company exempt by its charter may accept the provisions of the law and be taxed accordingly. The United New Jersey, which is exempt, now pays the State a tax of about \$300,000 yearly, which was imposed when the transit duties were abolished, and in lieu of those duties by special contract between the State and the Joint Companies. An acceptance of the new law, if allowed, would do away with this tax and considerably reduce the amount to be paid annually.

San Diego & Utah Southern.

Later advices state that the route of this projected road is to be from San Diego, Cal., by San Bernardino and westward across Southern California to the head of navigation on the Colorado River, at Callville, Arizona, where a connection with the Utah Southern Extension may be made. The capital stock is fixed at \$3,000,000, of which \$350,000 has been subscribed.

Indianapolis, Peru & Chicago.

A number of experiments have lately been made on this road with a view of testing the relative economy of coal and wood as fuel for the locomotives. The company has heretofore used wood, and there is a good deal of woodland along the line. The tests so far have resulted in favor of coal, but its adoption is not yet decided on.

Lafayette, Muncie & Bloomington.

Regular trains have not yet been put on between Muncie and Bloomington, but a daily mixed train is run between Muncie and Tipton.

Atchison, Topeka & Santa Fe.

Track is laid to Chico, Col., 12 miles beyond the last terminus at Neperte and 71 miles west of West Las Animas. Trains now run to Chico, and only 12 miles more of track is needed to reach Pueblo.

Little Rock & Fort Smith.

Track is now laid and trains are running to Ozark, Ark., five miles beyond the late terminus at Altus and 125 miles from the eastern terminus at Argenta, opposite Little Rock. The work on the road west of Ozark is being pushed forward.

Kansas City, Memphis & Mobile.

In the United States District Court at Jefferson City, Mo., Feb. 15, this company was adjudged a bankrupt. A meeting of the creditors was called, to be held in Kansas City, Mo., March 4.

Anderson, Lebanon & St. Louis.

The rails are laid from Anderson, Ind., westward 12 miles and construction trains are running. The work of extending the track towards Lebanon is being pushed forward as fast as possible.

Cincinnati, Wabash & Michigan.

Pending the completion of its own line to Anderson, this company has arranged for a connection with the Cleveland, Columbus, Cincinnati & Indianapolis by running its trains over the Lafayette, Muncie & Bloomington track from Alexandria to Muncie. The work of laying track between Alexandria and Anderson has been begun.

Peoria & Springfield.

This road now runs from Peoria, Ill., to Pekin, nine miles. There is talk of giving up the intention of extending it to Springfield and of building from Pekin by Mason City to Beardstown to connect with the Springfield Division of the Ohio & Mississippi.

Cleveland, Tuscarawas Valley & Wheeling.

After carefully considering the question the board has resolved to build the extension from Uhrichville to Wheeling on what is known as the Flushing route. The mineral resources of the country on both lines were nearly the same; the New Athens route would cost somewhat less to build, but it was considered that on the Flushing route there were more towns and that the road would hold a better position with reference to competing lines. Both routes were strongly advocated by the parties interested.

Wisconsin Valley.

The new line being surveyed from Tomah, Wis., to La Crosse is nearly finished. The line runs north of Sparta and along the north side of the La Crosse River to Neoshone. It crosses the Milwaukee & St. Paul at Winona Junction and will probably run along the foot of the bluff on the prairie east of La Crosse.

ANNUAL REPORTS.

Atlantic, Mississippi & Ohio.

This company owns a line from Norfolk, Va., westward to Bristol, 408 miles, with branches from Petersburg to City Point, 10 miles, and from Glade Springs to Salt Works, 10 miles, 428 miles in all. The company is a consolidation of the Norfolk & Petersburg, the South Side (Petersburg-Lynchburg) and the Virginia & Tennessee (Lynchburg-Bristol) companies. The road is of 5-foot gauge.

The debt of the company was as follows at the close of the last two fiscal years, Sept. 30, 1874 and 1875:

	1875.	1874.
Funded debt, except State debt.....	\$10,973,481 16	\$10,999,234 99
Unpaid interest, including October coupons.....	474,097 22	359,937 84
Floating debt.....	1,076,865 64	928,519 29
Total debt.....	\$12,524,444 02	\$12,287,691 12
Cost of property.....	19,374,408 02	19,178,715 87
Other assets.....	830,970 49	904,191 93
Debt per mile of road.....	\$38,927	\$37,775
Cost of property per mile.....	45,270	44,810

The report says: "During the year, the funded debt, assumed on account of the divisions, has been reduced by the retirement of \$20,000 of first mortgage bonds and \$12,381.83 of registered certificates of the Virginia & Tennessee Division, making a total of \$32,381.83 of past-due obligations taken in, and for which we are entitled to receive from the trustees an equal amount of Atlantic, Mississippi & Ohio bonds."

"In other respects the funded debt remains as at the date of our last report, except that the amount of funded interest notes has been increased by the sum of \$6,028. The floating debt of \$1,076,865.64, is in excess of the amount outstanding at that date by the sum of \$147,836.25."

The arrangements made with the bondholders in England are to be submitted to the stockholders after they have been considered by the board.

The Road Department expended \$255,011.12 in maintenance of way, being 20.06 cents per train mile. During the year 874 tons of new steel rails were laid on the mountain grades of the Virginia & Tennessee Division. Two new iron and five combination bridges were built. The department erected a new building for a foundry at Petersburg, and completed at Lynchburg a new and convenient passenger depot, owned jointly with

